PRESERVATION OF PRINT

HEARING

BEFORE THE

SUBCOMMITTEE ON SCIENCE, RESEARCH AND TECHNOLOGY

OF THE

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PRESERVATION OF PRINT

THURSDAY MAY 4, 1989

U.S. HOUSE OF REPRESENTATIVES,
COMMITTEE ON SCIENCE, SPACE, AND TECHNOLOGY,
SUBCOMMITTEE ON SCIENCE, RESEARCH AND TECHNOLOGY,
Washington, D. C.

The subcommittee met at 9:30 a.m. in room 2318, Rayburn House Office Building, the Honorable Doug Walgren, chairman of the subcommittee, presiding.

Mr. WALGREN. Well, let me call us to order if I might.

Today's hearing on the preservation of the written word is perhaps one of the most important subjects that might come before our committee. Certainly nothing may be more important to human beings than preserving the written word.

It seems pretty obvious that the fact that man can write may be the fundamental thing that distinguishes human beings from all other kinds of life. When you look back in history and see the importance of libraries in our culture, even if we see them only on TV—and I remember the role that the library at Alexandria played in one of the television historical restrospectives—and heard on public radio yesterday a woman talking about the Jewish library in Vilnus, Poland before the Second World War and what an important role those materials, even though they were later brought to Frankfurt on their way to destruction but not destroyed—the important role that those materials played in that whole mosaic of life.

I come from a district in Pittsburgh, Pennsylvania where we have very rich and diverse ethnic groups who are devoted and spend tremendous energies on preserving the traditions of their immediate family past and in many ways it is far more meaningful to us to know where we come from as human beings than it is to know where perhaps even the universe came from, or at least how it started.

The mosaic that lies behind that is something that gives life to all of us and although I may be a child not so much of the written age, I can only think of Zeitel in Fiddler on the Roof and try to sense how important respecting her parents and where her culture came from was to giving that character life. So when we focus on preserving the written word, we are focusing on something that is really as important as anything this committee might deal with.

The Library of Congress currently has about 14 million books and 25 percent of that collection has become embrittled or rapidly deteriorating, and the numbers of books in other major collections—the New York Library, the Yale Library—that are going

under destructive change and likely to be permanently lost are large fractions of the total collections.

As I understand it, this deterioration is largely the result of the onset of the use of acidic paper with industrial America in the 1850s, and that previous to that, the paper that was traditionally used was not acidic, and in fact older books have much greater real life.

We have efforts to try to find ways to preserve not only the actual text through programs of reducing these books to microfilm, but seeking ways to actually preserve the book itself and that area is the area that we will be exploring in our hearing this morning.

I'd like to ask unanimous consent to submit a written statement for the record and recognize the ranking minority member, Mr. Boehlert from New York, for any comments he would like to make at this point.

Mr. BOEHLERT. Thank you, Mr. Chairman.

Mr. Chairman, one of the great calamities of the ancient world was the destruction of its libraries. These storehouses of knowledge were plundered and sacked by barbarians who plunged Europe into a barbaric age cutting it off from the glory and grandeur of its past.

Today, in a kinder, gentler time, we are our own barbarians. Our past is being consumed not by violence, but neglect. Though we herald our day as the information age, an era of mass communication, we are witnessing the slow and steadily crumbling of the foundation of our knowledge—our library collections.

Ironically, this deterioration is occurring at the very time that fresh attention is being lavished on our library buildings and other historic structures. We have learned the hard way that a city and its inhabitants are diminished when it loses touch with its architectural past. We are now protecting buildings from the kind of arrogance that felled such monuments as New York's Pennsylvania Station, but unless we preserve the written record of our past, the thoughts, the lives, the very breath of our predecessors, then saving buildings offers nothing more than a kind of preservation provided by the neutron bomb. Beautiful edifices emptied of life.

This hearing is about preserving that written record and ensuring that future works do not meet a fate similar to those now in decay. We recoil when we see other societies suppressing documents, denying the public the right to examine the past. Indeed, such actions are the very hallmark of tyranny. Will we impose the same restrictions on ourselves through benign neglect? The loss of our library collections is not a source of concern solely for a few bibliophiles and antiquarians. We all lose. We all risk becoming stuck in time.

The nature of that risk was captured well in one of George Orwell's admonitions, one that takes on new meaning in this context—"Whoever controls the present controls the past and whoever controls the past controls the future."

Thank you, Mr. Chairman.

Mr. WALGREN. Thank you, Mr. Boehlert.

Are there other members who would like to make opening comments? The gentleman from California.

Mr. CAMPBELL. Thank you, Mr. Chairman.

Very briefly, I commend you for holding these hearings. I have had some experience with the need to preserve decaying documents at one of the great research institutions in the United States, the Stanford Library system, and I think that this is one of those things that's overlooked and shouldn't be. So I simply wanted to commend you and also express at least my personal gratitude for the appearance of Mr. Pell, our colleague from the other body, whose testimony I look forward to hearing.

Thank you, Mr. Chairman.

Mr. WALGREN. Thank you, Mr. Campbell.

Well, as Mr. Campbell indicated, our first witness today is Senator Claiborne Pell from Rhode Island. Welcome to our committee, Senator Pell.

Senator Pell has been the sponsor on the Senate side of a joint resolution to establish a national policy on permanent papers and the attempt to draw public attention and governmental attention to the problem that we're focused on today and we appreciate very much your coming over to our side and joining with us in these proceedings. Welcome to the committee.

STATEMENT OF THE HONORABLE CLAIBORNE PELL, UNITED STATES SENATOR, STATE OF RHODE ISLAND.

Senator PELL. Thank you very much, Mr. Chairman.

Thank you very much for letting me appear and I just wanted to thank the subcommittee and particularly my old friend and colleague, Mrs. Schneider, for allowing me to come before you.

I congratulate you on the subject matter of your hearing and what you're doing and would ask unanimous consent that my full statement be inserted in the record without objection.

Mr. WALGREN. Without objection.

Senator PELL. I would like to point out that the question of coordinating the policy of the EPA regulation with the use of the paper requires no conflict. In other words, if the limitations to using acid-free paper are to those papers that are of enduring value in the government and the EPA regulation with regard to recycled paper, which is more full of acid than the other kinds of paper, then there's no conflict between the two. In this regard, there is the resolution on the Senate side, S.J. Res. 394, introduced in October '88 and the present resolution, S.J. Res. 57, which has incidentally already 33 co-sponsors and is our parallel to the House Resolution introduced by Mr. Williams, House Joint Resolution 226, and my hope is that the two committees which have jurisdiction in this area would combine and be able to report out H.J. Res. 226. If that is adopted, it really does change the policy of the government.

It's also perhaps of some note that other countries see this problem as well. The United Kingdom has adopted a policy that all its permanent papers—all its papers in fact—will be printed on acid-free paper. Finland, the center of where much paper is produced, the wood pulp, is also adopting a policy of this sort. And it would be helpful—I'm sure the Library of Congress can do it—if they prepared a check list of those countries that do have a policy in this regard because it's not only our own books that are crumbling

away; it's the books of the world's storehouse of knowledge that's equally crumbling away.

[A memorandum subsequently prepared by the Library of Congress follows:]

Alkaline Paper
Activities Outside the United States

Austria

At least three mills are producing permanent paper. These are Neusiedler (which produces copying paper to the Austrian Standard A1119), Leykam Muerztaler, and Hallein Papier. Incentives for alkaline paper production are environmental and economic (alkaline is cheaper to produce). Much of the paper produced is exported. Publishers are reluctant to use permanent paper. A permanent paper standard exists that is similar to the ANSI standard in the U.S. No legislation has been initiated on this subject in Austria

Denmark

Is the secretariat for International Standards Organization Technical Committee 46, Sub-Committee 10, which is working on an international standard for permanent paper. Denmark has one large paper manufacturer, with several mills. Most of these mills produce alkaline paper. The permanent paper produced is marketed with the copyrighted name: Permalife.

Until 1960, the Danish National Archives had the legal right to instruct the government on what paper, ink, etc. to use in producing publications. Now this can only be done on a more informal basis, but it is done regarding permanent paper. Grass roots activity promoting the use of permanent paper in Denmark is increasing, led by the Danish Society for Book Crafts.

Finland

The last of the paper mills in Finland went alkaline in April 1989. By law, the national archives determines what materials and methods are to be used for records to be kept permanently. No legislation has been initiated on this subject in Finland.

Germany

Some companies produce alkaline paper, including Nordland and Feldmuehle. Although some mills produce alkaline paper, the mother companies produce acid paper; result is that alkaline papers are not advertised. No environmental standards are driving shift to alkaline. A standard is in the process of development. No legislation has been initiated on this subject in Germany.

Hungary

One mill produces alkaline paper.

Netherlands

A standard is being developed for permanent copy paper.

Norway

All new mills in Norway will be alkaline. At present, there are two major paper manufacturers. One converted five years ago to alkaline production and is responsible for 50% of yearly production of book paper for Norway. But, much of this is exported (much paper is also imported to Norway). The other paper mill has introduced

alkaline fillers, but with an alum size. This mill is considering shifting to an alkaline size. Estimates are that 40% of new books in Norway are printed on alkaline paper.

The major publisher in Norway is Den Norske Bokklubben. and It decided to use alkaline paper in all of its publications beginning in December 1988.

Pressure exists to use paper not detrimental to the environment. The Paper Research Institute, the Ministry of the Environment, and other government bodies recognize the need to use permanent paper, when suitable, in reaction to requests from libraries and archives. They also want to use paper recycled and not prepared with chlorine whenever suitable.

Normally, no laws would be passed pertaining to production and use of alkaline paper. There is simply a stated policy of the Ministry of the Environment.

Norwegian GPO has been studying the problem and they are using permanent paper for some publications. GPO decides which paper to use. Progress in permanent paper use has been satisfactory to date, and it hasn't been considered necessary to involve the government directly.

Sweden

Specific regulations exist about archival paper. Although these require that the paper be 100% cotton, the paper is acidic from alum size. The National Archives, which sets policy of what is acceptable as archival paper, is considering whether to choose another producer, and that supplier would be providing alkaline paper. The National Archives of Sweden can instruct the government regarding what kind of paper to use. A law in effect since the beginning of the century states that the National Archives will determine what is archival. They have a law stating that 10 copies of every government publication be on archival (i.e., rag) paper. This policy is now being revised. A reference group at the National Archives is discussing recommending alkaline paper for everything, but still keeping the requirement that ten copies on rag paper. Change will occur in August 1989.

Some mills produce alkaline paper. The two biggest mills are alkaline, but small ones are not. However, for sake of competition it is likely that several of the small ones will soon change to alkaline also. No legislation on permanent paper has been initiated in Sweden.

Swedish paper chemists are studying mechanisms of paper deterioration.

United Kingdom

Some paper mills produce permanent paper. The British Library is promoting its use in the UK and also trying to get it placed on the library agenda of the European Commission. The National Preservation Office at the Library is arranging for the testing of a range of papers (both in recently published books and new paper) to be tested to determine how much is acid and how much alkaline. The government printer (HMSO) says 50% of the books published in UK are on acid-free paper and a number of large publishers are now using

acid-free paper. There is no UK standard for permanent paper; they are waiting for the establishment of an ISO standard. There has been no legislative activity in the UK regarding permanent paper and its use.

Similar initiatives are underway in other countries. For example:

Canada There are now four mills from which Canadians can obtain alkaline paper.

Australia Work is underway on a permanent paper standard.

National Preservation Program Office
Library of Congress
May 1989

So this is the kind of policy that I would hope would be adopted. I know in the Historic Publications Commission, of which I used to be a member, we made the first effort in this direction by requiring that all the books to which we gave a grant should be printed in acid-free paper and that had a beneficial effect.

I thank you for letting me be with you. I'd like to stay all morning but I have to go back and preside in another committee.

[The prepared statement of Mr. Pell follows:]

Statement of Senator Claiborne Pell

House Subcommittee on Science, Research and Technology

May 4, 1989

Mr. Chairman, I very much appreciate having this opportunity to make a brief statement and I commend you and the members of the subcommittee for looking into this important question of paper and print preservation. We do indeed face a silent crisis because of the self-destruction of the acidic papers on which books and other publications have been printed since the mid-19th Century. The preservation of the whole record and literary output of the most remarkable century of human experience to date is in jeopardy and we should do everything we can to extinguish the smokeless fire and prevent its spread.

This is a subject with which I am presently concerned in my capacity as vice chairman of the Joint Committee on the Library, and I am very glad to see that Dr. Billington will tell you about the great efforts of the Library of Congress to deacidify its collections.

While I fully support these heroic efforts to prevent the deterioration of the books of the last 150 years, I have long thought that the problem should be attacked prospectively by promoting the use of acid free paper. I had an opportunity to

translate that idea into action as a member of the National Historical Publications and Record Commission in the 1970's, when we established the policy of publishing Commission documents on permanent paper.

Currently, I am continuing the crusade with legislation in the form of S.J.Res. 57, which would establish a national policy to encourage the publication on acid free permanent paper of books, records and publications of enduring value. The resolution, which I introduced on February 8, now has 34 cosponsors and is pending in the Senate Government Affairs Committee. I understand that an identical companion measure has been introduced in the House as H.R. 226 by Congressman Williams of Montana.

My resolution in a figurative sense would lock the library door against prospective invasion by publications printed on acidic paper. Very briefly, the resolution declares it to be a policy of the United States that all Federal records, books and publications of enduring value be produced on acid free permanent paper. In furtherance of that objective, the resolution urgently recommends that Federal agencies require the use of such paper for publications of enduring value, and require the use of archival quality papers for permanently valuable Federal records.

The resolution urges similar action in the private sector. It urgently recommends that American publishers voluntarily adhere to the American National Standard for permanent paper in printing publications of enduring value, and recommends that the use of such paper be noted in the publication, in advertisements and in standard bibliographic listings.

Finally, the resolution would urge the compilation of reliable statistics on the production of acid free permanent paper and on the volume required to meet the objectives of the national policy established by the bill. And it would direct the Librarian of Congress and the Archivist of the United States, together with the directors of the national libraries of medicine and agriculture, to monitor progress in implementing the national policy and report annually to Congress.

I particularly wish to emphasize that my resolution mandates no government program, and should impose no significant costs on the Federal government. If anything, the resolution could result in a net reduction in costs to the government because it will have the effect of reducing the long-range costs of deacidification. Every book produced on acid free paper today reduces the total number of volumes requiring deacidification, and frees up preservation resources which can be used to attack the crumbling backlog of publications dating back to 1850.

I understand, Mr. Chairman, that this subcommittee is particularly concerned about the impact of the Environmental Protection Agency's regulations, soon to be implemented, mandating the use of recycled paper by all Federal agencies and by state and local agencies using Federal funds for procurement. I'm sure we all fully support the good efforts of EPA in this regard and I commend the subcommittee once again for its timely review of the probable effects of EPA's action.

While I recognize that there is some apprehension that the EPA requirement may lead to a perpetuation of acidic paper through the recycling of products already having a high acid content, I would like to express the hope that the EPA policy does not necessarily involve a conflict with the basic premise of S.J.Res.57 and its House counterpart.

The fact is that only a small portion of paper procured by the Federal government is actually used in publications, and of that small share, only a select few publications should be designated as having "enduring value" as stated in my resolution. It certainly is not my intention, or that of others associated in this effort, to create a sea of permanently preserved documents of insignificant consequence. The resolution suggests a high degree of selectivity although it does not presume to dictate the terms

of "enduring value", leaving that to the judgement of the agencies involved.

Surely it should be possible, in the light of the relatively small volume of Federal publications of enduring value, to create a policy which will assure their preservation. So it would be my hope, Mr. Chairman, that these hearings will lay the groundwork for a reasonable sense of compromise between the requirements of the EPA with respect to recycling and the provisions of national policy which I hope we will be able to enact with respect to permanent paper. I wish you well in this endeavor and I thank you once again for this opportunity to present my views.

Mr. WALGREN. Well, thank you very much for coming, Senator.

Let me just invite other members if they might have some discussion—I realize that you're off and running and on a schedule, but we look forward to pursuing this with you across the capitol and I hope that we can play some role in encouraging us to go in the direction that you have set out.

Senator PELL. And thank you for letting my remarks that are written more articulately than they were when spoken appear in full in the record.

Mr. WALGREN. Thank you very much, Senator Pell.

I'd like to ask unanimous consent to enter in the record at this point an opening statement from Congressman Costello and, without objection, that will be the order.

[The prepared statement of Mr. Costello follows.]

OPENING STATEMENT
BY U.S. REP. JERRY COSTELLO
COMMITTEE ON SCIENCE, SPACE AND TECHNOLOGY
MAY 4, 1989
"PAPER AND PRINT PRESERVATION"

Mr. Chairman, it seems strange to know that as we sit here, books are deteriorating at an alarming rate because of the paper used in the printing process. Acids are eating away at some of literature's greatest treasures, now sitting in our libraries, and in the near future the paper will be too brittle to use and the books will be useless.

It is estimated that over 75 million books in U.S. research libraries are becoming too brittle to use. Today's hearing will focus on ways to preserve these books, periodicals and other documents, and ways to promote the use of acid-free paper to prevent future publications from decaying as well.

I look forward to hearing from today's witnesses and from technical experts on the technology that is available to remedy this situation. Libraries and other resource centers contain national treasures and the records of our country's history, and it would be a tragedy to bypass any possible technology that could be used to preserve them.

I am also concerned about the Environmental Protection Agency's regulations requiring agencies or contractors using federal funds to use weaker paper that could degenerate more quickly. I hope we can address these issues during this hearing today.

Mr. WALGREN. Also, I note for the record that there's certainly permission for photographs or other kinds of recording devices for this hearing.

Our first panel made up of Kurt Vonnegut of novelist fame from New York, New York, as they say; and Barbara Goldsmith, who is an author and trustee of the New York Public Library, if both of you would come forward. We are honored to have you here and appreciate your interest in joining us in this exploration.

As you know, any written statements that you would like to make can be reproduced in the record in full without more, and when these transcripts are produced there's a section that covers our verbatim transcripts and you can feel free to roam and emphasize points in whatever way you would like to give them life in that verbatim section of the transcript, as well as submitting your written testimony for the record.

So let me welcome you here, Mr. Vonnegut. It's an honor and we would be pleased to hear you, and then Ms. Goldsmith, and then we will have a chance to have some conversation and questions. Mr. Vonnegut.

STATEMENT OF KURT VONNEGUT, NOVELIST, NEW YORK, NEW YORK

Mr. VONNEGUT. Thank you.

I am indeed a novelist and I am indeed from New York City. I am here at the request of the New York Public Library, a great research library, second only I believe to your own in this hemisphere.

I can't *bring* you good news, I'm here to *celebrate* with you the good news that we all know, I think. And the good news is, of course, not for my own profession alone but for all users and lovers of books for many centuries to come. The good news is, of course, that the technology already exists and is in use to manufacture books which will last hundreds of years rather than for decades. And I speak of acid-free paper.

Because such paper has not been used in all books, even very important ones, our library in New York has some 32 miles of books now destroying themselves with acid. This conflagration, as has already been pointed out, for all its silence and lack of heat and smoke, surely rivals the burning of the library of Alexandria in ancient times.

The cost of rescuing just one book from this self- destruction I'm told is about $60. Members of the two writers' organizations to which I belong, PEN and the Authors Guild, have requested firmly that their publishers use only acid-free paper for their books. The publishers have uniformly been glad to agree to do this.

I ask you now—I don't believe I need to ask you, but I ask you anyway, on behalf of the New York Public Library and no doubt on behalf of libraries everywhere, that the federal government do all it can to encourage the printing of everybody's books on acid-free paper. The cost of doing this, as real experts on paper can testify, is negligible.

We owe this to the future. We owe this to ourselves. Again, I brought good news, not bad, and perhaps this committee will find it

a relief to ponder how best our beloved country might make use not of lasers or of rockets or of particle accelerators or whatever, but of the simple and beautiful technology born in China two or three thousand years ago.

Thank you.

Mr. WALGREN. Thank you, Mr. Vonnegut. We appreciate that statement.

Let's turn to Ms. Goldsmith.

STATEMENT OF BARBARA GOLDSMITH, AUTHOR AND TRUSTEE, NEW YORK PUBLIC LIBRARY, NEW YORK, NEW YORK.

Ms. GOLDSMITH. Thank you. I want to thank this committee for inviting me to testify today on the need for permanent paper to ensure that our cultural heritage will be preserved for future generations.

Right now, as you probably know, it's estimated that 77 million volumes or a quarter of the total holdings in American research libraries are deteriorating at an alarming rate and at least 10 million of these books and periodicals are unique copies.

The problem of preserving this deteriorating knowledge on microfilm and by various other restoration methods is monumental and, as you know, it costs millions of dollars annually. And every two years the amount of printed material in this world doubles.

Well, fortunately—and I bring good news, as well as Mr. Vonnegut—there is a way to attack this problem and that's at its root—in the paper itself. It's as if I have the image that all of us in this room are in a boat and we're just bailing as fast as we can, but the boat is sinking. And then someone comes along and says, "Wait a minute. I have means to plug this leak." The leak, of course, can be plugged by the conversion for printed materials to acid-free paper that will last at a minimum of 300 years instead of self-destructing internally in approximately 30 years.

I want to tell you a little bit about my own involvement with this problem and its devastating effects. It started almost a decade ago when I was frequenting libraries to research my book, "Little Gloria, Happy At Last." It was then that I discovered that books printed before 1850 were usually in pretty good condition, but those that came later were so brittle that they turned to dust under my fingertips. It's a devastating experience to have that happen. You turn a page and there's nothing left but dust.

And I don't know if Mr. Vonnegut has told you, but that doesn't happen just to old books. His "Slaughterhouse Five" someone brought him to autograph and as he turned the page to autograph it it disintegrated.

Well, in seeking an explanation for this, I learned of course what you all know, that with the advent of the industrial revolution we had a major leap in literacy but concomitantly a major leap in the need for paper and rag stock churned by hand was replaced largely by wood pulp churned out by newly perfected machinery and chemicals such as aluminum sulphate and alum rosin compounds were added to keep paper smooth and prevent the ink from running.

It was only 30 years ago that we discovered that these chemicals were the biggest culprits, because when they combined with moisture they provide an acidic environment within the paper itself that ignites slow, self-consuming fires of destruction. Preservationists estimate that this accounts for 75 to 90 percent of paper deterioration.

Well, all of you know that the switch to acid-free paper is unquestionably a morally correct decision, but also it's a practical one since paper for quality books is cost- comparable in acidic and acid-free paper.

Initially what I thought was needed was increased public awareness of this problem. Less than two years ago, I called 20 of the most prominent authors in America to find out if they were published on acid-free paper. Not one of them knew. I didn't know either until I embarked on this crusade. And publishers doubted that this could be cost- comparable because, if it was, they had never heard of it.

Well, at the New York Public Library, we then commissioned cost studies that proved that it was cost- comparable and that is no longer an issue.

I want to tell you about our March 7th event at the New York Public Library. It was what our outgoing president, Vartan Gregorian, termed, "The single most important step in the preservation of our cultural heritage." About 100 distinguished authors and major publishers gathered at the library to sign a landmark decision calling for the use of acid-free paper for all first printings of quality hard cover books. And I'd like to attach that to my testimony. It was our most influential publishers, such as Bantam, Doubleday, Dell, Harper & Row, Simon and Shuster, McMillan, and you will read the names of the authors as well.

Two national writers' organizations, PEN and the Authors Guild, sponsored this event with the New York Public Library and gave us the backing of thousands more writers. The Association of American Publishers also endorsed our effort and I will enclose their resolution.

This dramatically raised public consciousness and I want you to know that we are here today because we can't emphasize enough how every effort makes a difference. Publishers are beginning to change their long-standing paper buying relationships with mills and because of increased awareness eleven major mills are converting this year alone.

I am not a scientist, but I hope that quite apart from the recycled paper issue and having nothing to do with it, at this hearing you will consider the technical ramifications of how the pollution of both our air and water is lessened by a non-acidic manufacturing process and I hope you will begin to monitor paper manufacturing mills to make sure they meet your governmental standards for environmental protection.

I want to mention parenthetically that in Great Britain acid-free paper took a leap from 10 to 88 percent when people of scientific and technological expertise became involved in the process. The manufacture of acid-free paper on a large scale is our most viable choice for all printed material and today I have brought with me some testing pens so that you can see that right now there's a lot

of paper out there but it's hit or miss. You will find that, yes, book paper is acid-free, but so might be the memo paper in front of you, and I've even tested toilet paper and found it acid-free.

This needs to be systematized so this paper can be used in a proper fashion. Permanent paper is undoubtedly a cause whose time has come and inroads are being made by many organizations, including the Task Force for the Library of Medicine on which I serve, and, of course, the Commission on Preservation and Access, which has contributed significantly to shaping an agenda for this.

But above all, Senator Clairborne Pell, who was here today, has taken one of the most important steps because his joint resolution with Pat Williams establishes a national policy on permanent paper that extends the printed records to the federal government and by making it a policy that all federal records, books and publications of enduring value be printed on acid-free paper, he can change the face of what is happening in America.

I urge all of you to support Senator Pell and Congressman Pat Williams' joint resolutions.

In closing, I'd like very much to thank this subcommittee for organizing this hearing. Ultimately, the constant demand for this paper will morally, economically and practically render it the only choice. We have an obligation to protect the future of the printed word. It's our only hope for immortality, for remembering the past, for benefitting the present, and for ensuring our cultural heritage. And I thank you very much for inviting us here today.

[The prepared statement of Ms. Goldsmith follows.]

Testimony of

Barbara Goldsmith
Author,
Trustee of The New York Public Library

on
Paper Preservation and Related Research and Technology

before the

Subcommittee on Science, Research and Technology
Committee on Science, Space, and Technology
United States House of Representatives

May 4, 1989

I want to thank the Subcommittee on Science, Research and Technology for inviting me to testify on the need for permanent paper to ensure that our cultural heritage will be preserved for future generations. Right now it is estimated that 77 million volumes--a quarter of the total holdings in American research libraries--are deteriorating at an alarming rate. At least 10 million of these books and periodicals are unique copies. In the New York Public Library alone, over 35 linear miles of shelves in the Central Research Library contain over two and a half million dying books. The problem of preserving this deteriorating knowledge on microfilm and by various other restoration methods is monumental and costs millions of dollars annually. And every two years the amount of printed material doubles.

Fortunately there is a way to attack this problem at its root--the paper itself. It's as if all preservationists have been together in a sinking boat bailing as fast as we can, but now we have the means to plug the leak. This means is the conversion of printed materials to acid-free paper that will last for 300 years instead of self-destructing, as does acidic paper, in approximately 30 years.

My own involvement with the problem and its devastating effects on the collections of this country's research libraries began about a decade ago when I was frequenting libraries to

research my book Little Gloria...Happy at Last. I discovered then that though materials printed before 1850 were usually in good condition those that came later were often amber in color and so brittle that they frequently turned to dust under my fingertips. In seeking an explanation I learned, what you may know, that with the advent of the Industrial Revolution came a major leap in literacy and concommitantly a need for more paper. Rag stock processed by hand was largely abandoned in favor of wood pulp churned out by newly perfected machinery. Chemicals, such as aluminum sulphate and alum-rosin compounds, were added to keep paper smooth and prevent the ink from running. It was discovered, only thirty years ago, that these chemicals eventually combine with moisture to produce an acidic environment, thereby igniting slow, self-consuming fires of destruction within the paper itself. Preservationists estimate that this environment accounts for 75 to 90 percent of paper deterioration.

The switch to acid-free paper is unquestionably a morally correct decision but also it seemed a practical one since this paper for quality books is cost-comparable to acidic paper. Initially, what was needed, I thought, was increased public awareness of the problem. Less than two years ago I called twenty prominent American authors to ask if their books were printed on acid-free paper. Not one of them knew. Publishers doubted the cost-comparability statistics. Subsequently, the New

York Public Library commissioned two cost comparability studies proving that our statistics were correct.

On March 7th of this year at the New York Public Library there took place what our outgoing President, Vartan Gregorian, termed "the single most important step in preserving our cultural heritage." A group of approximately one hundred distinguished authors and major publishing figures gathered at the Library to sign a pledge of their commitment to the preservation of the printed word. This landmark declaration called for the use of acid-free paper for all first printings of quality hardcover trade books. Attached to my testimony is a copy of this declaration of book preservation on which you will see the signed commitments from some of the most influential publishing houses in America, such as Bantam/Doubleday/Dell, Harper and Row, McGraw-Hill, Macmillan, Random House, Simon and Schuster, William Morrow, W.W. Norton and many others as well as most university presses. You will also see the signatures of noted authors who will henceforth only be printed on permanent paper. Two national writers' organizations, PEN (Poets, Essayists, and Novelists) and the Authors Guild were sponsors of this event, which gave us the backing of several thousand more writers. The Association of American Publishers contributed a resolution declaring their support of this effort. In organizing this crusade we have dramatically raised public consciousness about the dire problem of our disintegrating heritage.

Every effort makes a difference. Publishers are beginning to change their long-standing paper-buying relationships and to buy from acid-free mills. With an increased demand, the availability of acid-free paper will inevitably increase. This year alone, in an atmosphere of public awareness, eleven major American paper mills have decided to convert to acid-free paper.

I'm not a scientist but I hope in this hearing you will consider the technical ramifications of how the pollution of both our air and water is lessened by this acid-free manufacturing process. I hope you will begin to monitor paper manufacturing mills to make sure they meet your governmental standards for environmental protection. In Great Britain, acid-free paper took a leap from 10 to 88 percent after governmental scientific and technological experts became involved in this process. The manufacture of acid-free paper on a large scale is our most viable choice for all printed material. Once a mill has converted, the variety of paper manufactured can expand, but right now it is often a hit or miss process. When you think of cost-comparability consider that you will find, yes, book paper is acid-free, but you may also find that memo paper and even toilet paper can be acid-free. This needs to be systematized by just such a group as I am addressing to meet all publishing needs.

Permanent paper is a cause whose time has come. Inroads are being made by research, university, and medical libraries as well as by numerous permanent-paper advocacy groups. These include the Task Force of the National Library of Medicine on which I serve, which is the world's foremost library of medical publications, and the Commission on Preservation and Access, which has contributed so significantly to shaping an agenda for a national preservation strategy.

Senator Claiborne Pell and Congressman Pat Williams' recent joint Resolution for establishing a national policy on permanent paper extends to the printed records of the Federal government the commitment made by authors, publishers, editors, agents, and their support groups on March 7th at the New York Public Library. By making it a policy that all Federal records, books and publications of enduring value be produced on acid-free permanent paper and by calling for the monitoring of this paper, we are helping to ensure that knowledge is preserved for generations to come. I urge the Congress to pass Senator Pell and Congressman Williams' crucial joint resolution.

In closing, I would like to commend this subcommittee for organizing this hearing to address the issues facing this country on the use of acid-free paper. Ultimately the constant demand for the use of this paper will morally, economically, and practically render it the only choice. We have an obligation to

protect the future of the printed word for in it is our only hope for immortality; of remembering the past, of benefiting the present, and of ensuring our future cultural heritage. Thank you.

THE NEW YORK TIMES, THURSDAY, MARCH 16, 1989

DECLARATION OF BOOK PRESERVATION

THE NEW YORK PUBLIC LIBRARY COMMITMENT DAY · MARCH 7, 1989

We, the undersigned authors and publishers,
hereby declare our commitment to use acid-free paper*
for all first printings of quality hard-cover trade books
in order to preserve the printed word
and safeguard our cultural heritage for future generations.

*subject to availability

AUTHORS

PUBLISHERS

Susan Sontag
President, PEN American Center

Robert K. Massie
President, The Authors Guild

THE NEW YORK PUBLIC LIBRARY

The Permanent Paper Honor Roll

On March 7, a number of authors and publishers met at the New York Public Library to lend their names and support to the movement for permanent paper to be used in at least the first printings of their books (News, *LJ*, April 1, p. 16). Their names were reproduced in a full-page ad in the *New York Times* on March 16, and we are pleased to add them to *LJ*'s Permanent Paper Honor Roll.

We also would like to take note of a resolution endorsed by the Resources and Technical Services Division of the American Library Association calling for a "National Preservation Week." Further developments on that idea will be reported as we learn them.

The authors are:
Walter Anderson
Isaac Asimov
Olivier Bernier
Patricia Bosworth
Barbara Taylor Bradford
Marie Brenner
Hortense Calisher
Robert A. Caro
Susan Cheever
Avery Corman
Joan Didion
John Gregory Dunne
Nora Ephron
Frances Fitzgerald
Sandford Friedman
Allen Ginsberg
A.R. Gurney
Barbara Goldsmith
David Halberstam
Philip Hamburger
Irving Howe
Arianna Stassinopoulos Huffington
Susan Isaacs
Alfred Kazin
Judith Krantz
Jill Krementz
Robert K. Massie
William Maxwell
E. Ethelbert Miller
Anna Murdoch
Gloria Naylor
George Plimpton
Emily Prager
Richard Rhodes
William Safire
Kirkpatrick Sale
Arthur Schlesinger Jr.
Maurice Sendak
Sidney Sheldon
Susan Sontag
Tad Szulc
Gay Talese
Calvin Trillin
Kurt Vonnegut
Tom Wolfe
Morton Jankow, literary agent

Publishers:
Bantam/Doubleday/Dell
Beacon Press
George Braziller, Inc.
Columbia University Press
Cornell University Press
Doubleday
M. Evans & Co. Inc.
Free Press
David R. Godine
Grove Press
Harper & Row
Harvard University Press
Hearst Trade Book Group
Henry Holt and Co. Inc.
Houghton Mifflin
Alfred A. Knopf
Louisiana State University Press
McGraw-Hill Inc.
Macmillan
Meckler Publishing
William Morrow Inc.
Newmarket Press
W.W. Norton and Co.
Ohio University Press/
Swallow Press
Princeton University Press
Random House
Random House Adult Trade
Rosen Publishing Group
Shambhala Publications
Shoe String Press
Simon & Schuster
Smithsonian Institution Press
Summit Books
Syracuse University Press
TFH Publications
Ticknor & Fields
Time Inc. Book Company
Walker & Co.
Yale University Press

Association of American Publishers, Inc.

Lawrence Hughes Chairman
Nicholas A. Veliotes President
Thomas D. McKee Executive Vice President

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Facsimile 212-689-9121

February 16, 1989

Mr. Vartan Gregorian
President
The New York Public Library
Fifth Avenue and 42nd Street
New York, NY 10018-2788

Dear Vartan,

At a meeting today of the Executive Committee of the Association of American Publishers the following resolution was adopted:

"The Association of American Publishers urges its members to support the efforts of the New York Public Library's Committee of Authors and Publishers for the Preservation of the Printed Word and to declare their commitment to use acid-free paper, subject to availability, for all first printings of hard-cover books in order to preserve the printed word and safeguard our cultural heritage for future generations."

Sincerely,

Lawrence Hughes
Chairman

cc: Shellie Goldberg
Barbara Goldsmith

LH/jt

BOARD OF DIRECTORS: Lawrence Hughes, Chairman, *Harcourt Brace Jovanovich Trade Book Group*; Alberto Vitale, Vice Chairman, *Random House/Knopf Publishing Group*; Deborah E. Wiley, Treasurer, *John Wiley & Sons, Inc.*; Charles A. Bunts, Secretary, *Houghton Mifflin Company*; Paul Ambruster, *Hudson Hills Press, Inc.*; John Barbara, *Reader's Digest Association*; Robert B. Clarke, *Gordon Interpublished*; Ann G. Dilworth, *Addison-Wesley Publishing Co., Inc.*; Karen A. Dolan, *Lamb, Brown & Co., Inc.*; J.G. Goodman, *The Johns Hopkins University Press*; Phyllis G. Grann, *The Putnam Publishing Group*; Bruce Harris, *Bantam Books, Inc.*; Lynn A. Harris, *D.C. Heath & Company*; Laurence S. Lawrence, *Simon & Schuster, Inc.*; Alfred A. McDougal, *McDougal, Littell & Co.*; Susan Peterson, *Bookstore/Del Rey/Fawcett Books*; William F. Reilly, *Macmillan Publishing Company*; Jerome S. Rubin, *The Times Mirror Company*.

Mr. NAGLE. We want to thank both of you for your testimony this morning.

Let me yield to my ranking minority member, Mr. Boehlert, for any questions he may have.

Mr. BOEHLERT. I, too, would like to thank you for your testimony.

I'm curious. Ms. Goldsmith, you talked about the public consciousness and I would think, quite frankly, a minute percentage of American people are concerned about this issue, and they should be. So I applaud what both of you are doing and your organizations are doing to increase the public awareness.

Let me ask you some basic questions. For example, when you sign a contract with your publisher, do you stipulate that the book should be published on acid-free paper?

Ms. GOLDSMITH. Our March 7th event involved perhaps the most powerful agents in America—Lynn Nesbit, Morton Janklow, all of ICM, all of CMA—and they will negotiate these contracts only for acid-free paper. But more importantly, the authors themselves will not allow their books to be printed from now on in hard cover trade editions without acid-free paper.

There wasn't one of them that said, "What if I don't get published?" They all said, "Can't I do more?" And they are really aware of it. We have now something like 4300 signatures, but they include everybody from Kurt Vonnegut to people that I must say they cut down the forests for, like Judith Krantz, Danielle Steele, Sidney Sheldon, John Irving, Norman Mailer—I can go on and on and on—and they will all insist on acid-free paper.

Mr. BOEHLERT. Well, that's good news. You've got a lot of good news for us this morning.

Ms. GOLDSMITH. We do.

Mr. BOEHLERT. Let me ask you another question before I yield to some of my colleagues.

How about environmental groups? Have you considered working in conjunction with environmental groups? Because I would think they would be as enthused about this as you are.

Ms. GOLDSMITH. I said in my opening remarks that I am not a scientist. I agree with you, but our expertise is in rallying writers, authors, publishers, book agents, anyone to do with that aspect. I encourage someone—for example, Mr. Charles Kalina who will speak to you later—to organize such a group as you speak of. Their expertise is vast and I certainly think it would be the next major step that should be taken. I wish we could take it. We don't have the expertise to do that.

Mr. BOEHLERT. Mr. Vonnegut, do you have any comment on that?

Mr. VONNEGUT. No. I think we can certainly do that as private persons.

Mr. BOEHLERT. What you can do—I mean, let's face it, when you write something people read it—op-ed pieces, that type of thing. I would think someone of your stature enticing the New York Times to accept an op-ed piece from you about this very subject would reach a vast array of the American public.

Mr. VONNEGUT. Well, as you can see, we are preaching to the converted here as nearly as I can tell. There appears to be no opposition.

Mr. BOEHLERT. This is the "good news gang" here. But would you consider something of that nature?

Mr. VONNEGUT. Of course, and I do a lot of public lecturing in such places as Oregon and Washington. I was just there and I did mention it then and, of course, the paper industry is huge out there.

Barbara, do we have any opposition? Do we have any enemies?

Ms. GOLDSMITH. Well, as I also stressed, this environmental thing is something that this committee is really equipped to deal with. You point us in the right direction. We're gung-ho. You point us and we will help you in any way we can. We will write to the New York Times. We have written to the New York Times. In about two weeks there's going to be a major takeout in the New York Times Book Review on this issue. I have written for Lears, Publishers Weekly, the Authors Guild Journal, Parade Magazine which reaches 45 million people. You tell us what you can do to protect our environment and I guarantee you we will put it out there for the American public to read.

Mr. BOEHLERT. Well, Mr. Vonnegut asked a very key question as he turned to you and said, "Do you know of anybody who's against this?" Do you?

Ms. GOLDSMITH. Yes, I certainly do. Publishers are reluctant to break the way they do business with mills they have done business with for 50 years. They are afraid that if they need paper quickly and they don't call Joe at the acidic mill they won't get that paper. The availability of paper in a tight market is something that frightens them and until more mills convert they are not going to change the way they've done business. They want the books out there in case of a runaway best-seller.

And so far, every time I have mentioned the environmental issue, people have said, "Don't get into that." The paper mills do not want to hear about streams being polluted. As a matter of fact, they are all doing studies, as the cigarette companies are doing, to prove that there is no pollution—more pollution connected with acidic manufacture.

There is a long way to go. We have made a start. Hard cover trade books represent one percent of the problem. Your governmental printing represents another 40 percent. So if we can get up that high, then maybe there will really be good news, not just a little glimmer. There's a lot of bad news around right now.

Mr. BOEHLERT. Thank you very much.

Thank you, Mr. Chairman.

Mr. NAGLE. The gentlelady from Rhode Island.

Mrs. SCHNEIDER. Thank you kindly.

I think there's some controversy about the numbers that we're throwing around here, but later on the publishers will have the opportunity to testify and it's my understanding that they have said that over 80 percent now of all of the books that are published are on acid-free paper. Does that sound right to you?

Ms. GOLDSMITH. That sounds absolutely accurate now for first printings of hard cover trade books. My one percent is of the use of paper. In other words, the whole publishing industry is a drop in the bucket.

Mrs. SCHNEIDER. Are you aware of any efforts, for example, in other countries that might act as a model as to how the movement is proceeding elsewhere?

Ms. GOLDSMITH. Yes. Anthony Quinton, who is the head of the British Library sent me statistics that when government scientific and technological people became interested in the water problems in Great Britain and the environmental problems that acid-free paper went from 10 to 88 percent over a four-year period.

Mrs. SCHNEIDER. So the most convincing argument there you're suggesting is the environmental argument?

Ms. GOLDSMITH. The enforcement of governmental rules.

Mrs. SCHNEIDER. Well, granted, you mentioned that 40 percent of the problem we're talking about now is government-generated?

Ms. GOLDSMITH. There's an enormous amount of government printing. I don't know if anyone in the room has statistics on what it is in dollars.

Mrs. SCHNEIDER. They're all conferring in the back there so I guess the next panel will enlighten us further on that.

Well, it certainly appears that with the amount of enthusiasm that seems to have been generated in England on behalf of the environmental arguments that there is a great opportunity to leverage that with environmental groups throughout the nation and, perhaps, even book clubs throughout the nation so that we can build the grass roots support for the kind of change that we're talking about. As you point out, change is one of the most difficult challenges for not only individuals to make but, especially for institutions and businesses to make.

I might also mention one other thing. Given the great sensitivity to the environment, you made a remark which I might gently suggest that you refrain from in the future, and that was some folks would even cut down the forest or the last tree for this book or that book. This committee is also very much concerned with the loss of tropical rain forests, so despite the fact that we love those novels and we love the printed word, I don't think we'd go quite that far.

But I thank you very much for your advocacy and for the enthusiasm that you bring to an argument that, as we have pointed out, has seemed to have limited response to, but we certainly are looking forward to working with you in this effort to achieve our common goals. Thank you.

Ms. GOLDSMITH. Thank you.

Mr. NAGLE. I'm curious. The statement that you said that 80 percent of the first printing of books that are published on acid-free paper—what about the second printing? What about the paperbacks that the Members buy in the airport because we spend so much time on the planes? Are those paperbacks worth preserving, I guess is the first question. The second is, how are they printed?

Ms. GOLDSMITH. I don't want to be in the judgment business on what is worth preserving and what is not. We had a startling example of that at the New York Public Library where we preserved the 1930s Warsaw telephone books. No one would have thought that was worth preserving, but after World War II Jews based their reparations claims largely on those telephone books where they could prove they had a residence and a phone in Warsaw. So

you run an enormous risk in saying what is worth preserving and what is not. Certainly, we call paperback books reprints because they do exist in other forms. So I don't think they are very important on the scale on what is most urgent to preserve. Also, the paper in it, as you will see now, is very thin and that is not yet cost-comparable to acid-free paper. So we have an economic problem as well with paperback reprints.

Mr. NAGLE. This is for both of you—you have authors scattered literally across this country. Have you given any consideration to making the same type of presentation and request to state legislatures and the volume of paper that they use? My own state, Iowa, for example, just mandated that we would only use degradable plastics, that we would not buy as a state agency the traditional plastic that is not biodegradable or degradable. Have you given any consideration to taking this show on the road, so to speak, into the state legislatures?

Mr. VONNEGUT. Well, I thank you for that suggestion. It seems a very wise one. We haven't had the manpower or been able to mobilize people to do that, but obviously that's a swell idea, so thank you.

Ms. GOLDSMITH. It's a wonderful idea considering that among our thousands of signers we have almost every state in this union represented as far as writers are concerned. So we do have the outposts if we mobilized. It's a wonderful suggestion.

Mr. NAGLE. Staff has just informed me that Connecticut apparently has taken such steps about acid-free paper. Other states have not. But I would think that state legislatures frankly would find your testimony as interesting as we have this morning.

When you negotiate a contract with your publisher, is there any cost associated with the request that only acid- free paper be utilized in the first printing?

Mr. VONNEGUT. No. It turns out that the cost differential is negligible. At first we thought we were doing something very brave, just to demand acid-free paper in order to save the planet and so forth, and it turned out it was no ultimatum at all, that the publishers said, "Sure."

Mr. NAGLE. How discouraging. You fought the windmill and the windmill didn't fight back.

Ms. GOLDSMITH. As a matter of fact, that's why we were able to make our point with so many of the major trade book publishers because they found it easier to convert their whole organization than to deal with each author separately and say, oh, this is the one that said acid-free paper and that one doesn't care, and they found that more and more writers were insisting. So it was easier from a managerial point of view to convert the entire company than to worry with each separate contract.

Mr. NAGLE. One last question if I could, and you touched on this earlier. What about other countries, other authors, international organizations? Is there any kind of a movement going on there at all?

Mr. VONNEGUT. Well, we have the instrument for getting one going. As what we imagined would be a tough victory, we won only this past year, and yet we both mentioned PEN, which is an international organization, and even the U.S.S.R. is part of it now, as

they weren't for a long time. So yes, we have the instrument for doing research to find out what other countries are doing.

May I say parenthetically that the worst pollution I've seen anywhere is in the socialist countries?

Mr. NAGLE. Well, I want to thank you for coming this morning. You've highlighted effectively and with great advocacy the issue in front of us. I wasn't frankly aware of the problem until yesterday afternoon when they told me I had to sit in this chair, but I'm intrigued by it and I think the other members that have been here are also, and we have two panels behind you, one with our government printing, the Library of Congress; and then the publishers themselves will be our third panel this morning. So I think we can have a thorough exploration of the issue and I encourage you to sail on and take this thing across the country. Thank you very much.

Could we have the next panel come forward, with Dr. James H. Billington, who is the Librarian of Congress, who will be accompanied by Dr. Peter G. Sparks, Director for Preservation, Library of Congress; and Dr. Chandru Shahani, who is a Research Officer, Preservation, Research and Testing Office of the Library of Congress; and Mr. Charles Kalina, Special Projects Officer, National Library of Medicine and a Consultant to the National Information Standards Organization; and Mr. Jeffrey Denit, Deputy Director, Office of Solid Waste, Environmental Protection Agency.

Let's take them in the order in which I read. Dr. Billington first.

STATEMENT OF JAMES H. BILLINGTON, LIBRARIAN OF CONGRESS; ACCOMPANIED BY PETER G. SPARKS, DIRECTOR FOR PRESERVATION, LIBRARY OF CONGRESS; AND CHANDRU SHAHANI, RESEARCH OFFICER, PRESERVATION, RESEARCH AND TESTING OFFICE, LIBRARY OF CONGRESS.

Dr. BILLINGTON. Thank you, Mr. Chairman.

It's a pleasure and privilege to be here speaking on behalf of your library, which is the largest single repository of human knowledge and memory in the history of the world and also the repository of the largest preservation effort, for both of which we—and I think all of the American people and future generations—are in perpetual and continuing debt to the Congress of the United States. So we are also very pleased that you are taking cognizance of this problem.

I want to set it in a slightly broader context than our colleagues have, while reinforcing their general point that this is a potential national disaster—the degradation not just of our nation's intellectual heritage but the record of civilization of which the Library of Congress is the repository, not simply for the United States but for most of the world. We have the largest Latin American library in the world, bigger than anything in Latin America; the largest Arab library, bigger than anything in the Arab world, as well as the largest English-speaking library. So the stakes are really quite enormous and there is a lot of good news, but it has to be put in that kind of context.

First of all, the irony is that an educated citizenry's demand for more people to have more access to the written word, the driving

force in our multi-cultural democracy, was the driving force in a way which caused this cultural disaster.

The introduction of wood pulp in the paper-making process resulted from the increased demands for reading material. And, the modern chemistry of pulp and paper production created to meet this demand created the elements that caused paper deterioration. It's already been partly described for you and my colleagues here can describe it in great detail. But in essence, the acid-producing materials are chlorine bleaching and alum/rosin sizing. Up to well into this century little attention was paid to the lasting effects of this paper chemistry. And, only in 1959 William J. Barrow, a pioneer in the study of paper chemistry, first attracted the world's attention by predicting that most books published in the first half of the 20th century would be in unusable condition in the 21st century, to say nothing of books published in the latter half of the 19th century.

The record that is crumbling is a part not only of our own national story in America, our own memory as it were, but it's also the case study—just confining ourselves to the American books, of which we, because of the copyright deposit law, are the principal repository. But our story is the case study for building democracy on a large scale that most others wish to learn from. We see that in the Library of Congress—the enormous interest in the American record. And, the perishability of books is a function of this modernity, their use of the mass-produced paper that is of lower quality than the older variety. At risk are not just books, however, printed in the United States, but foreign books that immigrants brought here from other lands during this same period, providing us with our first real international extension of memory.

That's true in a great research library like the New York Public Library, which we just heard, and it's even more true in the Library of Congress where more than two-thirds of our books are in foreign languages, the great majority of them for the period where the degradation risk is the greatest.

So the record of humanity's most recent history—its rush into modernity, complexity and new fields of specialized inquiry and expression—that's what's in danger of disintegration. We have the most at stake in this country, the most to gain from the preservation of this legacy because we have more material and we have more need to study it to make our knowledge-based system of participatory self-government work. And, we have more people capable of doing the studies in our vast, diverse and widely dispersed academic establishment.

So libraries around America and the world are being threatened, but nowhere is the threat as serious as it is in your library, here in the Library of Congress, where the dimensions result from the largest collection of knowledge ever assembled in one place and where the library has the responsibility for the preservation, organization, and storage of 88 million items. We receive 31,000 items a day, of which we can only keep 6,000, and in that choice we are in effect making mostly the choice for the human race's memory as well as for our own collections.

We believe that an integrated approach to preservation is the only way to deal with this problem so long neglected. We must

meet it on all fronts while looking toward permanent solutions, which is what these hearings are mercifully addressed to.

A survey undertaken several years ago revealed that 25 percent of the Library's paper-based collections were already brittle and that 77,000 volumes a year moved into the brittle stage. The brittle stage being the stage where if you turn it once it disintegrates. The study also pointed out that 98 percent of the general and law collections in the Library of Congress were printed on acid paper.

Now the long-term solution, of course, to a problem of this dimension is to print books and other scholarly information on long-lasting alkaline paper, as has already been eloquently suggested. There are encouraging signs in the American paper industry in the switchover from the production of acid paper to production on alkaline paper. And, all of us in this business applaud Congress' effort to encourage the production and use of alkaline paper through a resolution of Congress.

The government of the United States—the country's largest single publisher—must set the example for all American publishers. The Library of Congress wants to work with the Joint Committee on Printing to devise a new standard for procurement of paper by GPO. The standard that we propose will also incorporate laboratory tests to ensure that paper of inferior quality, whether recycled or not, will not be used by federal agencies.

The Library of Congress' preservation problems are unique in that at least two-thirds of our publications come from foreign countries and many of these countries use very poor quality paper, even worse than our own worst. Yet, we as a nation must collect information and other library materials world-wide if we are to continue to be competitive in the world market, and if we are to continue to support the work of this government. Now in recent weeks, just to take one example, I have received several requests from members of Congress to accelerate our collecting activities for Japanese publications. We are, as we are in most foreign language areas, the largest library in the world outside of that country. But these kinds of requests are increasing on the part of your colleagues in the Congress and in the executive branch.

Now let me summarize briefly our Library of Congress preservation activities. Our total budget for preservation is in excess of $8 million annually, by far the largest preservation effort anywhere in the world. Again, the Congress is the world's leading patron of preservation, so you have a direct interest in the long-term solutions as well as the magnificent efforts that you have been making for a great many years now.

Since 1968, the Library of Congress has microfilmed more than 225,000 volumes and is currently microfilming some 20,000 volumes a year at an annual cost of more than $1 million. In addition to microfilming books, which deals with the embrittled ones, the Library's newspaper microfilming program has during the last 20 years produced over 413,000 reels of newspapers, including virtually all of our American holdings. The 30-year manuscript microfilming program—we have the papers, for instance, of most presidents up to Coolidge and all kinds of other private papers of public officials—has produced more than 12,000 reels of microfilm, including the original papers of 23 presidents of the United States.

Research continues in the Library's laboratory which will lead to long-term solutions to preserving existing acidic paper. The Library of Congress' major effort has been to develop a deacidification process that is designed to treat books on a massive scale, thereby allowing us and other research libraries in this country and around the world to deacidify books before they are put on the shelf and to treat books already in the collections and not yet brittle.

In 1976, the Library patented the diethyl zinc deacidification technology, which has been tested successfully in 28 tests this past year or so in a pilot project, and I am happy to report that the technology is available for licensing to commercial concerns and other libraries through the U.S. Department of Commerce. This, Mr. Chairman, is a remarkable case of, in effect, venture capital in the public sector developing a technology for which the American taxpayers through the Library of Congress own the patent and is able to be the purveyor of an important service to the library community. Treatment with diethyl zinc will greatly help to extend the life of paper in books by several hundred years. And, we are in the process of preparing a request for proposals for commercial concerns to provide mass deacidification for our collections using diethyl zinc or another proven technology that will meet our procurement specifications. The process must be able to deacidify our collections within 25 years.

Now it's of utmost urgency that the mass deacidification program begin as soon as possible because of the acidic condition of our collections and the number of books that move to the brittle and unrecoverable stage annually. The cost of deacidification we estimate under this process will be about $5 a book, whereas it costs nearly $60 a book to microfilm it if they are allowed to pass into the embrittled stage. So we are anxious to move quickly on deacidification from an economic standpoint.

Moreover, we are working to define optimal storage conditions for books and paper and we're studying the effect of lignin on the permanence of paper. We share the results of such research with other libraries.

Mr. NAGLE. Pardon me. What's lignin?

Dr. BILLINGTON. Well, I'm going to defer to my scientific constabulary here, Peter Sparks in the first instance.

Dr. SPARKS. Mr. Chairman, lignin is a component of paper or wood pulp before it's actually purified, but it gets into paper sometimes because the purification process doesn't get it all out.

Mr. NAGLE. I knew that.

[Laughter.]

Dr. BILLINGTON. I couldn't have put it better myself, Mr. Chairman.

Mr. NAGLE. That was just a test for you. I knew that.

Dr. BILLINGTON. I was afraid of that. That was why I was accelerating the speed of my speech here.

Anyhow, the Library is also devoted to conservation of our special collections of rare books, prints, drawings, maps, manuscripts, music and area studies materials. More than 20,000 items a year receive conservation treatment. Specialized preservation work on nitrate motion picture film is carried on at the Wright-Patterson Air Force Base in Ohio and more than 55 million feet of film have

been transferred to safety base film. If you think the paper problems are bad, Mr. Chairman, the nitrate film which most of our film was, motion picture film in particular, degenerates into, in effect gunpowder, an explosive. Therefore, we have to keep that off Capitol Hill—out here.

Senior information systems personnel, preservation specialists, and librarians are actively engaged in applying new technologies to the preservation of library materials using optical disk technology.

As the external arm of the Library's preservation effort, the National Preservation Program disseminates information about preservation and fosters national and international cooperative efforts. We provide advice to libraries which have experienced a disaster such as those caused by water or fire. In the latter instance, a team of Library of Congress specialists have been coordinating international efforts to restore the badly-burned and water- damaged collections of the Soviet National Academy of Sciences in Leningrad—the largest library disaster in the history of the world in terms of absolute numbers. It occurred last year and it was almost unnoticed—typical I may say, Mr. Chairman, of the problems of libraries which are among the most unnoticed on the national scene and the most untended of our cultural problems, and yet one of the most fundamental and health of our kind of democracy, which wouldn't really exist in the form it does without the 115,000 libraries in this country and the whole network of unique resources that we have developed.

Anyhow, the Library of Congress is also actively involved with international organizations in developing these preservation standards.

Now looking to the future, Mr. Chairman—and this is the subject of your hearings—paper chemists in the Library of Congress are optimistic and join in the general good news side of the picture. They see light at the end of the tunnel, but they point out that additional research needs to be done. A better understanding of how paper degrades is needed if we are to advance beyond deacidification as the only treatment for acid paper. With respect to research on the strengthening of paper, research at the University of Leeds, sponsored by the British Library is directed at an investigation of a graft copolymerization process. The Library is following the progress of this research as well as evaluating a parylene coating process, now mainly used to coat electronics, which is being applied to strengthening paper at the Nova Tron Corporation.

One area in which the United States government could take a positive step is to provide grants to universities to attract young scientific talent to the field of library preservation. Moreover, the National Institute of Standards and Technology in cooperation with the Library of Congress and the National Archives and Records Service could take a more active role in research and testing of paper.

In sum, we must accelerate research and testing of paper properties as it relates to long-term preservation. At the same time we must become aggressive advocates for alkaline paper, urging publishers to use permanent durable paper as well as indicating in the book that the paper is alkaline; urging authors to designate their preference for the paper; and convincing government officials at

both the national and the state levels to purchase only alkaline paper for official publications and agency records.

The Library of Congress can cooperate in this effort through national and international educational programs. It can take steps to maintain accurate statistics on the use of alkaline paper. Congressional attention, exemplified by your hearing today, has helped library administrators to convince their governing bodies that the problem is a real one and needs to be addressed aggressively. Thus government, private industry, the scientific and technical community, the publishing industry, authors, and library administrators all have significant roles to play in our race to save this nation's—and to a very large extent the world's heritage. The Library of Congress as the largest library in the world and one that plays an important role in information and communication with our network of remarkable libraries throughout this country will continue to be a major partner in this effort, as your agent, Mr. Chairman, in this noble effort. But the effort has to grow and time is not on our side.

The economics are astonishing but will get worse if they are deferred.

We would be happy to answer any questions you may have, Mr. Chairman.

[The prepared statement of Dr. Billington follows.]

Statement of James H. Billington
The Librarian of Congress
Subcommittee on Science, Research, and Technology
Committee on Science, Space, and Technology
U.S. House of Representatives
May 4, 1989

Mr. Chairman and Members of the Subcommittee:

I appreciate the opportunity you have presented to me to discuss a national disaster.

This national disaster is the continuing degradation of our nation's intellectual heritage and of the record of civilization because of the deterioration of library collections from acidic papers especially those produced since the 1850's.

Much of our young nation's history is recorded on paper printed since 1850. We must move quickly if we are to salvage this heritage for our grandchildren and those Americans who will live in our land in the twenty first century.

It is ironic that an educated citizenry's demand for the written word was the driving force which caused this cultural disaster. The introduction of wood pulp to the papermaking process resulted from increased demands for reading materials. Advances in papermaking technology were made at the expense of the permanence of paper. The modern chemistry of pulp and paper production created the elements that cause paper deterioration. The acid-producing materials are chlorine bleaching and alum/rosin sizing. Early in this century little attention was paid to the lasting effects of this paper chemistry; almost no efforts were made to preserve deteriorating library collections.

In 1959, William J. Barrow, a pioneer in the study of paper chemistry, predicted that most books published in the first half of the twentieth century would be in unusable condition in the twenty first century -- to say nothing of books published in the latter half of the nineteenth century.

The record that is crumbling is a large part of our own national story in America, which is the case study that others most wish to learn from. In other countries as well, the perishability of books is ironically a function of their modernity: their use of mass-produced paper that is of lower quality than the older variety. At risk also, therefore, are many of the rare books that immigrants brought here from other lands during this same period -- providing us with our first real international extension of memory.

The record of humanity's most recent history -- its rush into modernity, complexity and new fields of specialized enquiry -- seems particularly in danger of disintegration. America has the most at stake -- and the most to gain -- from the preservation of this legacy; because we have more material, more need to study it (to make our knowledge-based system of open and participatory self-government work), and more people capable of doing the studies, in our vast, diverse and widely dispersed academic establishment.

Libraries around the world are being threatened. But nowhere is the threat as serious as it is at the Library of Congress. Here the dimensions of the problem are enormous, resulting from the largest collection of knowledge ever gathered

in any one place. The Library has a responsibility for the preservation, organization, and storage of 88 million items. Preservation has emerged as one of our major priorities over the last two decades.

We believe that an integrated approach to preservation is the only way to deal with this problem. That is, we must meet it on all fronts while looking toward permanent solutions.

Let me explain the dimensions of the problem. A survey undertaken several years ago revealed that 25 percent of the Library's collections were already brittle and that 77,000 volumes moved to the brittle stage each year. The study also pointed out that 98 percent of the general and law collections in the Library of Congress were printed on acid paper. Even with increased production of alkaline paper, the problem of deteriorating paper will not go away in our lifetime. Massive efforts are needed.

The long-term solution, of course, is to print books and other scholarly information on long-lasting alkaline paper. There are encouraging signs in the American paper industry in the switchover from the production of acid paper to production on alkaline paper. I applaud Congress' effort to encourage the production and use of alkaline paper through a resolution of Congress. This would certainly assist the consciousness-raising we need in promoting permanent durable paper.

The government of the United States -- the country's largest publisher -- must set the example for all U.S. publishers. The Library of Congress wants to work with the Joint

Committee on Printing to devise a new standard for procurement of paper by GPO. The standard that we propose will also incorporate laboratory tests to insure that paper of inferior quality -- whether recycled or not -- will not be used by Federal agencies.

The Library of Congress' preservation problems are unique in that at least two thirds of our publications come from foreign countries and many of these countries use very poor quality paper. Yet, we as a nation must collect information and other library materials world-wide if we are to continue to be competitive in the world market. For example, in recent weeks, I have received several requests from Members of Congress to accelerate our collecting activities for Japanese publications.

The preservation problems of the Library of Congress are further complicated because of the multi-media nature of the Library's collections -- film, graphics, audio tapes, scripts, still photographs. Much of this material is also subject to deterioration.

I will summarize briefly current Library of Congress preservation activities. Our total budget for preservation is in excess of $8 million annually -- by far the largest preservation effort in the world. The Congress of the United States is the world's leading patron of preservation.

Books that are too brittle to use must be microfilmed if we are to save their contents. Since 1968, the Library of Congress has microfilmed more than 225,000 volumes and is currently microfilming some 20,000 volumes a year at an annual cost of more than $1 million. This program was greatly

accelerated as a result of increased appropriations during fiscal 1989. As part of this national effort to save the contents of brittle books the Library of Congress is working with the Commission on Preservation and Access, the National Endowment for the Humanities, and major research libraries to avoid duplication.

In addition to microfilming books, the Library's newspaper microfilming program has during the last 20 years produced over 413,000 reels of newspapers, including virtually all of our U.S. holdings. The 30-year manuscript microfilming program has produced more than 12,000 reels of microfilm, including the original papers of 23 Presidents of the United States.

Research continues in the Library's laboratory which will lead to long-term solutions to preserving existing acidic paper. The Library of Congress' major effort has been to develop a deacidification process that is designed to treat books on a massive scale thereby allowing us to deacidify books before they are put on the shelf and to treat books already in the collections and not yet brittle.

In 1976, the Library patented the diethyl zinc deacidification technology. This technology has been tested successfully this past year in a pilot project and I am happy to report that the technology is available for licensing to commercial concerns and other libraries through the U.S. Department of Commerce. Treatment with diethyl zinc will greatly help to extend the life of paper in books by several

hundred years. We are in the process of preparing a request for proposals for commercial concerns to provide mass deacidification for our collections using diethyl zinc or another proven technology that will meet our procurement specifications. The process must be able to deacidify our collections within 25 years. This would provide the Library of Congress the opportunity to deacidify all incoming receipts and to deacidify systematically the retrospective collections. Most important is that deacidification preserves the book or manuscript in its original form.

It is of utmost urgency that the mass deacidification program begin as soon as possible because of the acidic condition of our collections and the number of books that move to the brittle stage annually. The cost of deacidification is estimated at $5 a book. Since it costs nearly $60 to microfilm a book, we are anxious to move quickly on deacidification from an economic standpoint.

Moreover, we are working to define optimal storage conditions for books and paper and studying the effect of lignin on the permanence of paper. We share the results of such research with other libraries who are grateful because ours is the only library paper testing laboratory in the United States.

The Library is also devoted to conservation of our special collections of rare books, prints and drawings, maps, manuscripts, music and area studies materials. More than 20,000 items a year receive conservation treatment. Specialized preservation work on nitrate motion picture film is carried on at

Wright-Patterson Air Force Base in Ohio and more than 55 million feet of film have been transferred to safety base film.

Senior information systems personnel, preservation specialists, and librarians are actively engaged in applying new technologies to the preservation of library materials using optical disk technology. This technology has promise for preservation and for the wider distribution of the Library's collections.

As the external arm of the Library's preservation effort, the National Preservation Program disseminates information about preservation and fosters national and international cooperative efforts. We provide advice to libraries which have experienced a disaster such as those caused by water or fire. In the latter instance, a team of Library of Congress specialists have been coordinating international efforts to restore the badly-burned collection of the Soviet National Academy of Sciences in Leningrad. The Library is also actively involved with national and international organizations in developing preservation standards.

Finally, looking to the future, paper chemists in the Library of Congress are optimistic. They see some light at the end of the tunnel. But they point out that additional research needs to be done. A better understanding of how paper degrades is needed if we are to advance beyond deacidification as the only treatment for acid paper. With respect to research on the strengthening of paper, research at the University of Leeds sponsored by the British Library is directed at an investigation

of a graft copolymerization process. The Library is following the progress of this research as well as evaluating a parylene coating process (now mainly used to coat electronics) which is being applied to strengthening paper at the Nova Tron Corporation.

We must redouble our efforts to find a paper-strengthening process so that we may reap the full benefits of mass deacidification. Only then will we be on the winning side.

One area in which the United States government could take a positive step is to provide grants to universities to attract young scientific talent to the field of library preservation. Moreover, the National Institute of Standards and Technology in cooperation with the Library of Congress and the National Archives and Records Service could take a more active role in research and testing of paper.

In sum, we must accelerate research and testing of paper properties as it relates to long-term preservation. At the same time we must become aggressive advocates for alkaline paper, urging publishers to use permanent durable paper as well as indicating in the book that the paper is alkaline; urging authors to designate their preference for the paper; and convincing government officials at both the national and state levels to purchase only alkaline paper for official publications and agency records.

The Library of Congress can cooperate in this effort through national and international educational programs; it can take steps to maintain accurate statistics on the use of alkaline paper. Congressional attention, exemplified by your hearing today, has helped library administrators to convince their governing bodies that the problem is a real one and needs to be addressed aggressively. Thus government, private industry, the scientific and technical community, the publishing industry, authors, and library administrators all have significant roles to play in our race to save this nation's heritage. The Library of Congress as the largest library in the world will continue to be a major partner in this effort. But the effort has to grow. Time is not on our side.

We will be happy to answer any questions you may have.

Mr. NAGLE. Mr. Kalina.

STATEMENT OF CHARLES R. KALINA, SPECIAL PROJECTS OFFICER, NATIONAL LIBRARY OF MEDICINE AND CONSULTANT, NATIONAL INFORMATION STANDARDS ORGANIZATION, STANDARDS COMMITTEE II

Mr. KALINA. Thank you, Mr. Chairman, and thank you for the opportunity to describe the efforts of the National Library of Medicine to encourage use of permanent acid-free paper in the production of biomedical literature.

The National Library of Medicine charter is to be the depository and the disseminator of the world's biomedical knowledge for the nation.

The equivalent of one-third of the Library's acquisition budget for the next ten years is expected to be spent to clean up the backlog of the material that's already embrittled, by microfilming. Then there will be a continued maintenance cost of the material that's becoming embrittled.

In view of this, the Library Director Dr. Lindberg, and our board of regents in 1986 concluded that it was inefficient and illogical to store problems like that for the future and to continue such commitments of resources when much of the preservation problem could be stopped at its source by using acid-free paper, that does not deteriorate, for publication.

Accordingly, in early 1987, the Library convened a forum of over 100 paper and publishing industry experts to learn about the use of acid-free paper. Based on their recommendations we then organized a broad-based inter- disciplinary permanent paper task force of 35 members to advise us on the activities of encouraging publishers, in the biomedical area particularly, to use acid-free paper.

The task force made a number of findings. Most publishers were not aware of the problem of paper deterioration, even those that were already using permanent paper. So informing and educating them was and remains a necessity.

There are, fortunately, driving forces present in the technology and economics of paper making that are conducive to the growth of acid-free paper use. It appears that there is a sufficient supply of acid-free paper to meet the needs of today and it is growing.

Acid-free paper and acidic papers in equivalent grades are comparably priced, as Barbara Goldsmith mentioned. She conducted a survey of the trade publishers and we have conducted a survey of paper merchants and have confirmed that fact.

From that the task force concluded it would be feasible for most biomedical publications to switch to acid-free paper, but it recognized that paper cost for some publications on low weight paper would be higher, given the present paper technology. Fortunately, such publications constitute only a minority of the biomedical literature and so could continue to be microfilmed or could consider publishing limited editions, although that's not too desirable from the point of view of the bibliographic record.

The task force also noted that it is as important to know that acid-free paper is used in a publication as it is to use it. Only in that way can it be forestalled that there will be possible duplicative

preservation efforts in the future and that way to make sure that in fact we don't spend the $60 or however much it would be for some other possible preservation methods, that we wanted to save in the first place.

The use of acid-free paper needs to be identified in the publication, as Dr. Billington mentioned, as well as in the bibliographic records and there are steps being taken to be able to do that.

There is this need. For example, we've discovered that out of the 11 percent of titles that publishers say are on acid-free paper in the Medline data base, which is a listing of indexed 3,000 plus titles in biomedical literature—of those 11 percent, only 1/10th actually identify the use of acid-free paper in the publication and we certainly are working diligently to increase that proportion.

Of course, identification in the publication and in the record serves as a reminder and as a measure of continued acid-free paper use rather than just talking about it.

For many kinds of products it's useful to have standards. Standards provide common understanding of expected properties and performance. They facilitate product selection, purchasing decisions and even the identification.

Now there is an American National Standards Institute standard for uncoated permanent printing paper and a similar specification by the Joint Committee on Printing of the U.S. Congress. Paper makers and publishers have commented, however, that the standard is flawed for broad acceptance in paper manufacturing and in the paper marketplace. They believe that it should not attempt to prescribe categories of product requirements that are determined by what the paper is used for, such as resistance to wear and tear, brightness, opacity and color and that kind of properties. Such performance requirements are normally subject to agreement between users and sellers for the individual kinds of paper. The standard focus should be on prescribing requirements that are pertinent to assuring the permanence of the kind of paper. That is, composition requirements, such as the degree of alkalinity, of alkaline reserve, the absence of substances detrimental to permanence, such as lignin that was mentioned.

Given this background, the standard is now being revised and expanded to also apply to coated paper which is one category of material that it did not cover.

In summary, the National Library of Medicine continues to consider the problem of preservation from a variety of perspectives, be it microfilming or electronic imaging or replication on permanent paper, but it is firmly committed to furthering the use of permanent paper use. Acid-free paper is the preventive medicine for reducing the problem of deterioration of publications, not only in biomedicine but also in all areas of civilization's record.

Thank you.

[The prepared statement of Mr. Kalina follows.]

Statement

of

Charles R. Kalina
Special Projects Officer, National Library of Medicine

before the

Subcommittee on Science, Research, and Technology

of the

United States House of Representatives

May 4, 1989

Mr. Chairman and members of the Subcommittee:

Thank you for the opportunity to appear before this Subcommittee to describe the National Library of Medicine's efforts to encourage the use of permanent, acid-free paper in the production of biomedical publications. It is hoped that our experiences will be useful to the Subcommittee in its considerations of related issues of paper preservation.

The National Library of Medicine

The National Library of Medicine (NLM) is one of the three national libraries of the United States, together with the Library of Congress and the National Agricultural Library. NLM's Congressional mandate is to acquire, organize, and preserve the biomedical literature for the nation. NLM serves as a hub of a national network of seven regional medical libraries, 125 medical school libraries, and 4000 hospital and other local medical libraries. NLM is the world's largest research library in a single scientific and professional field, with holdings of more than 4 million items - books, journals, technical reports, pamphlets, manuscripts, theses, microforms, and audiovisual materials. The history of medicine collection includes medical texts and manuscripts dating as far back as the eleventh century.

Preservation Plan for the Biomedical Literature

How to preserve library collections in the face of the deterioration of paper caused by residual acids introduced in the papermaking processes is an increasing concern of the nation's libraries. NLM considers the problem of preservation from a variety of perspectives: environmental control, microfilming, acquisition of publications in permanent format not prone to deterioration, electronic storage of images, duplicating onto archival paper, deacidification, and other paper stabilization techniques.

The primary thrust of the NLM preservation effort includes microfilming of embrittled materials and attacking the problem of preservation at its source, by emphasizing acquisition in permanent format. It is consistent with the two major Congressional preservation initiatives for NLM: the annual one million dollars allocation for preservation microfilming, and support for the Library's effort to encourage the use of acid-free paper for biomedical literature.

The Library's very fine historical collection, maintained under the highest archival standards, is in superb condition. The older, most valuable works would in any case be expected to be printed on paper that antedates the introduction of acidic paper manufacturing processes. A recent survey revealed that 12 percent of the books and journals in the regular collection, however, an equivalent of 158,000 volumes, are so embrittled that they cannot be circulated to users without risk of irreparable damage. Each year an estimated 5000 additional volumes enter into that endangered category.

We are pleased that the NLM collection shows less deterioration than collections at other institutions, perhaps because it is housed under favorable environmental conditions and is not as old, on the average, as collections in other fields. Sample measurements suggest, however, that 92 percent of the Library's post-1800 holdings are printed on acidic paper that will eventually become brittle, and so the collection can be expected to present an increasing preservation challenge with time.

The Congress has supported the focus on aggressive preservation activities in the Library's long-range plan and has since 1984 been providing significant resources to assist the Library in preserving a priceless and treasured collection. Of the available preservation technologies, microfilming is the leading option available now, although its cost is high and microform use is not popular with readers. NLM is embarked on microfilming between 20,000 and 25,000 volumes annually at a cost of

$60 per volume, the lower end of nationally reported experience. By spending $1.2 million per year over the next ten years, the Library projects that it would in this way eliminate the backlog of 158,000 brittle volumes and at the same time keep abreast of the number of volumes that are progressively becoming brittle. There would then continue to be a maintenance expense of some $300,000 per year, in constant dollars, to deal with the additional 5000 or so volumes falling into the embrittled condition every year, a number that would be expected to increase as the collection grows and a greater proportion of it ages.

Attacking the Problem at Its Source

It is not responsible to continue to publish on acidic paper when it is known that its fate is to self-destruct. While symptomatic treatment and rehabilitative preservation of materials already at risk for embrittlement must continue to be mounted, it is imperative to encourage the use of permanent, acid-free paper as a preventive measure. The goal must be to make the problem progressively smaller every year.

It is inefficient and illogical to continue to apply costly, labor-intensive remedial measures to volumes on perishable paper when the problem can be prevented. The application of retrospective preservation methods unavoidably involves additional cost and effort. Libraries pay a high price to salvage publications printed on acidic paper. Resources devoted to collection preservation represent resources which are not available for purchases for collection development. This is no small matter when one considers that the costs of journal subscriptions are rising by 12 to 20 percent per year and libraries in growing numbers are being forced to cut back on the number of journals to which they subscribe.

The Long Range Plan of the National Library of Medicine and the preservation policy of its Board of Regents call for the Library to actively encourage the publishing industry to use permanent materials in the production of biomedical literature, in order to lessen the need for preservation treatment of new publications.

Because the Library claims no expertise about the paper industry, its distribution practices, or the chemistry and engineering of paper production, it asked over one hundred experts in the paper and publishing industry to join early in 1987 in a forum, held at NLM, to explore the problem of paper deterioration, the aesthetics, economics, and manufacture of permanent, acid-free paper, and to foster positive action in its use.

In addressing the participants, Representative William Natcher acknowledged the concern that he and his colleagues attach to NLM's preservation requirements, and urged them to arrive at solutions to future preservation problems. He believed that the problems can be reduced significantly by simply using more permanent paper in publications, and for that he encouraged the help of the key players on the use of permanent paper for biomedical literature that have gathered for this occasion. The group concluded that the approach to solving the problem of the deterioration of scholarly literature by increased use of acid-free paper was realistic, and that there were no reasons to delay decisions to switch to acid-free paper for most biomedical publications.

In accordance with the recommendations of the forum, the Library convened in early 1988 a 35-member Permanent Paper Task Force of commercial and academic press and learned society publishers, of editors, authors, paper manufacturers and distributors, printers, librarians, and preservationists. Gerard Piel, chairman emeritus of *Scientific American*, was selected to chair the new Task Force, and Dr. Lois DeBakey, noted author and educator in the field of scientific communication, was named co-chair. Some 400, or one fifth of the United States and European journal titles in the MEDLINE data base are represented among the Task Force membership.

The objectives of the Permanent Paper Task Force are to increase the awareness of publishers

and printers about the problem of document deterioration and about its solutions, to help authors and editors with their concerns about making their work last, to alert professional societies to the need for the permanence of their publications, and to interest the paper making industry in the scope and requirements of the biomedical literature paper market. The Task Force provides expertise and advice to the Library on the development of strategies for encouraging acid-free paper use and on the activities appropriate to implement them. It serves as an active resource for disseminating information about permanent paper use.

Acid-free Paper: Available and Affordable

The Permanent Paper Task Force found that there were misconceptions about acid-free paper availability and price, lingering from the early days of the industry, that needed to be resolved. It concluded that domestic acid-free writing and printing paper production capacity could accommodate further increases in demand for acid-free paper use in scholarly publications. It confirmed that prices of acidic and acid-free paper in paper grades used by most biomedical publications were comparable. Additional expense could be incurred in conversion by publications with high volume press runs that tend to use light weight groundwood paper, because permanent paper competitive in price with groundwood paper is currently not available. Such publications represent only a minority of medical titles, however. Pending further developments in paper technology, they could continue to use groundwood paper and be preserved by replication on microfilm, or consider publication of special or limited editions for archival use. The overseas edition of the *New England Journal of Medicine*, for example, is printed on lightweight acid-free paper, and so can serve the archival purpose for that publication.

The most striking proof that acid-free paper is available and affordable is that there are publishers who are already using it and don't even know it. The Task Force observed that there are driving forces present for the growth of acid-free paper use. It is being selected for general market and business publications, based on properties other than permanence. There are economic incentives for conversion to alkaline-based paper manufacturing. Not all of the current alkaline paper making capacity is directed at publication needs. As an industrial process, it is in use for making a variety of papers for commercial and industrial consumption as well. Under the circumstances of growing availability, there appears to be no need to have to formally consider what type of publications would be worthy of acid-free paper use, a consideration that may have existed when the product was in its infancy.

Identifying Acid-free Paper

The Permanent Paper Task Force also noted the importance of identifying each publication printed on permanent paper, in the publication itself and in the bibliographic records which describe it, in order to forestall duplicate efforts at preservation in the future and to confirm continuity of permanent paper use. Some 11 percent of the over 3000 journals indexed in MEDLINE and the *Index Medicus*, for example, are reported by their publishers to be printed on acid-free paper, and that figure is expected to rise as more data become available and more publishers convert to using acid-free paper. However, only a little over one percent of the journals in MEDLINE contain notices indicating that they are printed on acid-free paper.

The availability of a suitable standard greatly facilitates product selection and purchasing decisions and the identification of a product in use. An American National Standards Institute (ANSI) standard for uncoated permanent printing paper is available, as is a Joint Committee on Printing (JCP) specification. The Task Force was concerned that many paper manufacturers believe that some of the requirements of the standard are unduly restrictive, and that the test criteria specified in the standard are not compatible or useful in characterizing product performance in accordance with accepted industry practices. The Task Force concluded that standards should not represent a barrier in the way of progress to convert to making acid-free paper, but should make it possible for manufacturers to consistently meet a commonly understood product goal. They should not be so rigorous as to discourage publishers from searching for paper which is free of acid. The Task Force agreed that standards which are realistic and responsive to achievable goals in the making and use of acid-free, permanent paper need to be further formulated.

NLM is accordingly participating in the process of revision of the ANSI standard and of its expansion also to include coated paper, currently under way in order to create a workable standard which will be compatible with the cause of expanding the use of permanent, acid-free paper while accommodating in a reasonable way other expected paper performance needs.

Awareness of the problem of acidic paper and interest in its elimination has been gathering increasing momentum over the last few years. The activities of the Permanent Paper Task Force should ultimately also be helpful in facilitating preservation of the printed record in fields of scholarly endeavor other than biomedicine. The concern of the library community at large with the problem of document deterioration generally is of long standing, expressed through resolutions advocating acid-free paper use and dissemination of information about it. The New York Public Library has recently become the focus of an initiative by authors to encourage publishers of fiction and other general market publications to use acid-free paper for at least their first edition printing. The introduction of Senate and House resolutions in the 101st Congress to establish a national policy on permanent papers are indications of Congressional interest.

Acid-free paper is the preventive medicine for reducing the problem of deterioration of publications and the threat of their being lost to the record of civilization forever. The National Library of Medicine is firmly committed to furthering its use. The Library's goal is to ensure that the medical library of the future will be able to provide access not simply to current publications, but to the full historical record of medical science which is essential for its further productivity and advancement. With a clear danger of losing more than a century of that record, it is not reasonable to continue storing problems for the future. Prevention must begin now, for the hour is already dangerously late.

Mr. NAGLE. Mr. Denit.

STATEMENT OF JEFFERY D. DENIT, DEPUTY DIRECTOR, OFFICE OF SOLID WASTE, ENVIRONMENTAL PROTECTION AGENCY; ACCOMPANIED BY TINA KANEEN, ASSISTANT GENERAL COUNSEL, RCRA, ENVIRONMENTAL PROTECTION AGENCY

Mr. DENIT. Thank you, Mr. Chairman.

With me today is Tina Kaneen of the Environmental Protection Agency's Office of General Counsel in case the subcommittee has any questions with respect to the legal authorities that I'm about to discuss.

I am the Deputy Director of the Office of Solid Waste of EPA, one of the senior officials charged with the responsibility for implementing the Resource Conservation and Recovery Act. Section 6002 of RCRA mandates that EPA develop procurement guidelines for products designated by the agency or those specified in the statute which are or can be produced with recovered materials. These guidelines also must set forth EPA's recommendations with respect to the procurement of items containing recovered materials for use by procuring agencies subject to the statute. The purpose of this provision is to encourage procurement of products containing recovered materials to the maximum extent practicable.

This morning I will provide the subcommittee information about the paper and paper products procurement guideline, in which you have expressed a particular interest. I will begin by providing some background information about paper as a component of the solid waste stream, another vitally significant element of our environmental—

Mr. NAGLE. Could I interrupt you to ask a question I don't know the answer to? Is there a difference in the preservation of printed paper between recycled paper and, for lack of a better term, first-run paper, Dr. Sparks?

Dr. SPARKS. I can't think of any reason that we would take a different approach to preserving it other than if it was alkaline—both papers were alkaline, I think so far as we're concerned, if they tested out right, they would be considered permanent. But we do a lot of different preservation approaches and it's usually based on the condition of the paper at the time as opposed to how it was made necessarily.

Mr. NAGLE. I thought I remembered being told someplace some time somewhere that recycled paper was not of the strength of first-run paper because of something to do with the length of the fiber.

Dr. SPARKS. The fiber issue.

Mr. NAGLE. Is that a concern here in terms of preservation or not?

Dr. SPARKS. Let me let Dr. Shahani take that one.

Dr. SHAHANI. It would depend upon what recycled paper it was and what new paper it was. You could have new paper that came from bad stock or poor fiber and essentially inferior quality pulp and you could have recycled paper made from alkaline paper and it would be good paper. So it's hard to say.

Mr. NAGLE. There isn't a generic classification in that you can say that new paper is better than recycled paper?

Dr. SHAHANI. No. I would say paper would depend on what it was made from, whether recycled or new, the quality of the pulp.

Mr. NAGLE. I just wanted to get that in the context of what you were going to tell us here about your standards, so please go ahead.

Mr. DENIT. Yes, sir, I understand and I will also be addressing the thrust of your questions later on in my remarks.

In 1986, about 80 million tons of paper and paper products were consumed in the U.S.A., of which about 21.8 million tons were recovered for recycling and about 50 million tons were disposed, primarily in municipal solid waste landfills. This is about half of all manufactured product waste appearing in solid waste and about 35 percent of all municipal solid waste discarded.

The nation spends more than $9 billion annually on solid waste disposal. Many communities are running out of landfill capacity and siting of new landfills has become very difficult. Thus, activity to promote recovery and reuse of paper and paper products is a matter of national priority both to reduce the cost of disposal and to extend the life of existing landfills. Such recycling activities are important to extend our nation's limited natural resources.

Section 6002 of RCRA directs all procuring agencies subject to the statute when procuring certain designated items to procure those which contain the highest percentage of recovered materials practicable (and, in the case of paper, the highest percentage of postconsumer recovered materials practicable), provided that reasonable levels of competition, cost, and availability and technical performance are maintained.

Section 6002(d)(1) required federal agencies to eliminate both exclusions of items containing recovered materials and requirements that items be manufactured from virgin materials. Federal agencies are required by statute to revise their specifications to require the use of recovered material in such items to the maximum extent possible without jeopardizing the intended use of the item.

The Hazardous and Solid Waste Amendments of 1984 requires procuring agencies to develop affirmative procurement programs for procuring items designated under Section 6002 by EPA. This program must contain at least four elements: A recovered materials preference program; an agency promotion program; a program for requiring estimates, certification, and verification of recovered material content; and annual review and monitoring of the effectiveness of the procurement program.

Further Section 6002(e) directs EPA to issue guidelines in the case of paper and paper products. This guideline recommends the use of minimum content standards. The primary category of interest to the subcommittee today is book papers, for which EPA's recommended minimum content standard is 50 percent waste paper. While EPA has recommended a minimum content standard, the standard is advisory in nature. Procuring agencies may choose other approaches so long as the statutory requirements are satisfied. The recommended standard represents EPA's best judgment of how agencies can ensure compliance with the statute.

EPA recommends that the specifications established by agencies clearly identify both the expected performance and the specific intended end use.

Certain paper and paper products might not meet the standards of performance necessary for their intended end use if they contain any percentage of postconsumer recovered materials. Examples of such items are paper which comes into contact with wet or oily food, archival papers, certain map papers, deed papers, and face masks for use in "clean rooms."

EPA considered removing these paper items from its designation of items to be covered by the guideline, but found that they could not be successfully distinguished on fundamental technical bases and have to be excluded as a consequence on an item-by-item basis. EPA concluded that such determinations are best left to the individual procuring agencies.

Organizations involved in book and document preservation expressed concern about EPA's minimum content standards. After researching this issue, EPA determined that both virgin papers and recycled papers can be acidic or alkaline, depending on the manufacturing process used. While it is true that the deinking and bleaching processes used to make paper containing recovered materials are acidic, EPA found that there are manufacturers of recycled paper that produce archival papers. Evidence submitted to the EPA and made available to the public in the rulemaking docket shows that there are at least seven companies manufacturing acid-free grades of paper. Of these seven companies, two are manufacturers of paper containing recovered materials. As we have heard earlier this morning, there are now eleven major manufacturers which are in the process of converting to acid-free paper.

EPA believes that concerns over the permanence of paper are adequately addressed through our Section 250.13 of the guideline, which is entitled "Exclusion of products containing recovered materials that do not meet reasonable performance standards." If in this instance a procuring agency determines that papers containing postconsumer recovered materials do not meet reasonable performance standards for archival papers, then the agency can add an exclusion of these papers to its specifications; the basis for this exclusion, however, must be documented.

In conclusion, those who crafted the statutory provision for procurement guidelines under RCRA believed that the guidelines would expand and stabilize markets for recycled materials, thus easing demand for solid waste disposal capacity and promoting resource recovery. We have seen evidence in the 101st Congress that this belief is shared by other members of Congress, who have included provisions directing EPA to develop additional guidelines in various legislative initiatives which are under consideration.

In the context of EPA recently published Agenda for Action, which addresses the increasing urgency of creative solutions to the developing crisis in solid waste management, we have committed to undertake additional research related to markets for recycled materials.

In conclusion, with respect to those paper products where archival quality is essential, we believe that the final guideline provides adequate flexibility to ensure that intended end uses are not com-

promised, and we stand ready to work cooperatively with agencies which have particular needs and expertise in these areas to ensure that their needs are met.

We recognize that, for some purposes, achieving extended lifetimes for paper products is essential. In our view, however, the need for products with an extended life is the case which needs to be handled as the exception, rather than the daily printing and duplication activities which is more routine at EPA and other federal agencies.

We also believe that EPA and the federal government as a whole has a responsibility to take a leadership role in promoting efficient use of our limited natural resources and preserving our solid waste disposal capacity for that portion of the waste stream which cannot be recovered for reuse.

Mr. Chairman, this concludes my prepared statement. I will be happy to answer any questions you may have at this time.

[The prepared statement of Mr. Denit follows.]

STATEMENT OF
JEFFERY D. DENIT
DEPUTY DIRECTOR, OFFICE OF SOLID WASTE
ENVIRONMENTAL PROTECTION AGENCY
BEFORE THE
SUBCOMMITTEE ON SCIENCE, RESEARCH, AND TECHNOLOGY
OF THE
COMMITTEE ON SCIENCE, SPACE, AND TECHNOLOGY
U.S. HOUSE OF REPRESENTATIVES

May 4, 1989

Good morning, Mr. Chairman and members of the Subcommittee. I am Jeffery Denit, Deputy Director of the Environmental Protection Agency (EPA) Office of Solid Waste. The Office of Solid Waste is responsible for implementing the Resource Conservation and Recovery Act (RCRA). Section 6002 of RCRA mandates that EPA develop procurement guidelines for products designated by the Agency or those specified in the statute which are or can be produced with recovered materials. These guidelines also must set forth EPA's recommendations with respect to the procurement of items containing recovered materials for use by procuring agencies subject to the statute. The purpose of this provision is to encourage procurement of products containing recovered materials to the maximimum extent practicable.

This morning I will provide the Subcommittee information about the paper and paper products procurement guideline, in which you have expressed a particular interest. I will begin by providing background information about paper as a component of the solid waste stream; then I will turn to the specific statutory and regulatory provisions of the paper procurement

guidelines. Following these remarks, I will discuss the particular aspect of the guideline which is the focus of today's hearing -- ensuring that the intended end use of products, in this case, publications of archival quality, is not jeopardized by their recovered materials content. In conclusion, I will offer some general remarks on EPA's views of implementation of the guidelines and implications for Federal agencies. In particular, I will address the issue of archival quality paper and a broader issue for EPA -- the difficulty of procuring and printing on paper containing recovered materials for jobs which do not require archival quality paper.

Background

In 1986, about 80 million tons of paper and paper products were consumed in the U.S.A., of which about 21.8 million tons were recovered for recycling and about 50 million tons were disposed, primarily in municipal solid waste landfills; the remainder is being used in commerce. This is about half of all manufactured product waste appearing in municipal solid waste and about 35 percent of all municipal solid waste discarded. By any measure, paper and paper products constitute a major portion of the solid waste stream in this country.

The nation spends more than $9 billion annually on solid waste disposal. Many communities are running out of landfill capacity, and the siting of new landfills has become very

difficult. Thus, activity to promote recovery and reuse of paper and paper products is a matter of national priority both to reduce the cost of disposal and to extend the life of existing landfills. In addition, such recycling activities are important to extend our nation's limited natural resources.

From the outset, we need to be clear about the fact that disposal of paper does not present a human health or environmental hazard, as the wastes are nonhazardous in character. However, areas of the U.S. are running out of disposal options for all wastes, and face serious crises unless the solid waste stream can be reduced and/or disposed in an acceptable manner.

Statutory and Regulatory Requirements of the Paper Guideline

Section 6002 of RCRA directs all procuring agencies subject to the statute when procuring certain designated items to procure those which contain the highest percentage of recovered materials practicable (and, in the case of paper, the highest percentage of postconsumer recovered materials practicable), provided that reasonable levels of competition, cost, and availability and technical performance are maintained.

Two factors trigger this requirement. First, EPA must designate the items to which the requirement applies. However, in the case of paper and paper products, Section 6002(e) of RCRA specifically directs the Administrator to issue a procurement

guideline. Second, the requirement applies only when the purchase price of the item exceeds $10,000 or when the quantity of such items (or of functionally equivalent items) purchased or acquired in the course of the preceeding fiscal year was $10,000 or more.

Section 6002(d)(1) required federal agencies responsible for drafting or reviewing specifications for procurement items to review and revise specifications by May 8, 1986, in order to eliminate both exclusions of items containing recovered materials and requirements that items be manufactured from virgin materials. In addition, within one year after the date of publication of a procurement guideline by EPA, Federal agencies are required by statute to revise their specifications to require the use of recovered material in such items to the maximum extent possible without jeopardizing the intended use of the item.

Section 501 of the Hazardous and Solid Waste Amendments of 1984 added paragraph (i) to Section 6002 of RCRA. This provision requires procuring agencies to develop affirmative procurement programs for procuring items designated under Section 6002 by EPA. The program must assure that items composed of recovered materials will be purchased to the maximum extent practicable, be consistent with applicable provisions of Federal procurement law, and contain at least four elements:

1) A recovered materials preference program;

2) An Agency promotion program;

3) A program for requiring estimates, certification, and verification of recovered material content; and

4) Annual review and monitoring of the effectiveness of the procurement program.

Section 6002(e) directs EPA to issue guidelines for use by procuring agencies in complying with the requirements of Section 6002. The EPA guidelines provide recommendations for procurement practices and information on availability, relative price, and performance of designated items. In the case of paper and paper products, EPA's guideline recommends the use of minimum content standards. The recommended minimum content varies according to categories of these items developed during the rulemaking process. The primary category of interest to the Subcommittee today is book papers, for which EPA's recommended minimum content standard is 50% waste paper. While EPA has recommended a specified minimum content standard, the standard is advisory in nature; procuring agencies may choose other approaches so long as the statutory requirements are satisfied. The recommended standard represents EPA's best judgement of how agencies can ensure compliance with the statute.

Determinations that Procurement of Items Containing Recovered Items Is Not Required

When using recovered materials, it is important that the correct grades be supplied for the intended end use. EPA

recommends that the specifications established by agencies clearly identify both the expected performance and the specific intended end use.

Certain paper and paper products might not meet the standards of performance necessary for their intended end use if they contain any percentage of postconsumer recovered materials. Examples of such items are paper which comes into contact with wet or oily food, archival papers, certain map papers, deed papers, and face masks for use in "clean rooms."

EPA considered removing these paper items from its designation of items to be covered by the guideline, just as the Agency chose to exclude construction grade papers on a categorical basis. However, construction grade papers were categorically excluded based on their manufacture by a distinct and separate industry unrelated to manufacture of virtually all other grades of papers, and their distinct manufacturing standards and testing mechanisms. In addition, any evaluation of the feasibility and potential effectiveness of a Federal procurement program for these papers required extensive additional information. Thus, EPA decided that it would be more appropriate to consider construction grade papers in a separate context. To this end, construction grade papers were subsequently addressed in a separate guideline for procurement of insulation materials. Because many items considered for exclusions, such as archival quality papers, could not be

successfully distinguished on these types of technical bases, they would have to be excluded on an item-by-item basis. EPA concluded that it does not have the expertise to make such a technical determination, and that such determinations are best left to the individual procuring agencies. Based on its findings during development of the guideline, EPA's recommended standard for book papers expresses the recovered material content in a manner which recognizes that postconsumer recovered materials may not be appropriate for the category (i.e., the standard specifies "waste paper" rather than "postconsumer recovered materials").

During the comment period following proposal of the paper procurement guideline, organizations involved in book and document preservation expressed concern about EPA's proposed minimum content standards. Although they were generally in favor of using recycled paper products, they felt such use for books, government publications, and documents scheduled for permanent retention should not be allowed. Some cited an ANSI standard issued in 1984 that deals with an alkaline paper to slow deterioration. Several provided a rationale on the subject and submitted copies of the ANSI standard (standard number Z39.48-1984). EPA was asked to set up a category to promote the use of alkaline paper for all books, publications, and documents of enduring interest, or at least to set up a separate category, and to reduce or delete minimum percentages of waste paper for all the printing/writing papers except envelopes.

After researching this issue, EPA determined that both virgin papers and recycled papers can be acidic or alkaline, depending on the manufacturing process used. While it is true that the deinking and bleaching processes used to make paper containing recovered materials are acidic, EPA determined that there are manufacturers of recycled paper that produce archival papers. Evidence was submitted to EPA, and was made available to the public in the rulemaking docket, that there are at least seven companies manufacturing acid-free grades of paper. Of these seven companies, two are manufacturers of paper containing recovered materials.

EPA believes that concerns over the permanence of paper are adequately addressed in Section 250.13 of the guideline, which is entitled "Exclusion of products containing recovered materials that do not meet reasonable performance standards." If a procuring agency determines that papers containing postconsumer recovered materials do not meet reasonable performance standards for archival papers, then the agency can add an exclusion of these papers to its specifications; the basis for this exclusion, however, should be documented. Further, in the preamble to the guideline published last year, EPA encouraged the development of technical performance specifications by agencies such as the Government Printing Office, the General Services Administration, and the Joint Committee on Printing that require permanence so long as they do not specifically exclude the use of recycled

paper. We believe that these agencies, which frequently produce printed materials which need to be retained for extended periods of time, are more qualified to develop such specifications than EPA.

Conclusion

EPA's guideline for procurement of paper and paper products containing recovered materials was published on June 22, 1988. Accordingly, RCRA directs that procurement of paper and paper products in accordance with section 6002 commence on June 22, 1989. Responsibility for implementation of the guideline rests with individual Federal agencies and other entities subject to the provisions of the guidelines. While there is no specific statutory provision for enforcement by EPA, the statute does provide for implementation of its requirements by the Office of Procurement Policy in cooperation with EPA, and OFPP has the responsibility for coordination of the policy of section 6002 by other Federal agencies. We recognize EPA's expertise in the areas of product specifications and procurement is limited.

Those who crafted the statutory provision for procurement guidelines under RCRA believed that the guidelines would expand and stablize markets for recycled materials, thus easing demand for solid waste disposal capacity and promoting resource recovery. We have seen evidence in the 101st Congress that this belief is shared by other Members of Congress, who have included provisions directing EPA to develop additional guidelines in

various legislative initiatives which are under consideration. Some states have gone further than the existing Federal program by including price preferences and set aside programs to increase procurement of products containing recovered materials. These states have reported some success in achieving the objectives set out for such programs. Our own recent efforts in the area of solid waste recycling have convinced us that expanded availability and stability of markets is crucial if we are to achieve increased rates of recycling. In the context of our recently published Agenda for Action, which addresses the increasing urgency of creative solutions to the developing crisis in solid waste management, we have committed to undertake additional research related to markets for recycled materials.

In conclusion, there are two important points I want to convey to the Subcommittee. First, with respect to those paper products where archival quality is essential, we believe that the final guideline for paper products provides adequate flexibility to ensure that intended end uses are not compromised, and we stand ready to work cooperatively with agencies which have particular needs and expertise in these areas to ensure that their needs are met.

Second, a broader concern for EPA, is the administrative difficulty associated with using recycled paper for printing materials which are a part of our routine operations. As is the case in many other Federal agencies, our final products are

achieved only after many drafts are developed and refined. Consequently, only a small portion of our paper products need to be preserved indefinitely. However, at the present time EPA must request, and receive permission from the Joint Committee on Printing on a case-by-case basis, to have documents printed on recycled paper. This is particularly an issue when we are printing booklets describing the solid waste crisis, brochures encouraging recycling, and other related items. The resource recovery potential of routinely recycling and printing on recycled paper at Federal agencies could be enormous. For example, at our EPA Headquarters office alone, we have estimated that 300 tons of high grade white ledger paper were collected for recycling in 1988. On a government-wide basis, the potential for resource savings are clearly significant.

On the other hand, we recognize that, for some purposes, achieving extended lifetimes for paper products is essential. In our view, however, the need for products with an extended life is the case which needs to be handled as the exception, rather than the daily printing and duplication activities which is more routine at EPA and other Federal agencies.

However, we also believe that EPA, and the Federal government as a whole, has a responsibility to take a leadership role in promoting efficient use of our limited natural resources and preserving our solid waste disposal capacity for that portion of the waste stream which cannot be recovered for reuse.

Expanding and assisting in the stabilization of markets for products containing recovered materials is one important way in which we can assert such leadership.

Mr. Chairman, this concludes my prepared statement. I will be happy to answer any questions you may have at this time.

...

Mr. NAGLE. I'm a little confused. Recycled paper that's acid paper, can that only be recycled as acid paper?

Mr. DENIT. No, sir.

Mr. NAGLE. How does that work? I mean if we put something out that's the bad stuff, does it come back recycled as the bad stuff?

Mr. DENIT. Let me touch on two different angles of that. One is that in the basic manufacturing process, for example, deinking, or in the case of the so-called pulping process or kraft process, that is primarily an acidic manufacturing process. Ultimate product paper, however, is for the most part pH neutral. Chemicals added, such as the alum sulphate mentioned earlier in the testimony this morning, are so-called sizing agents. These sizing agents will dictate the characteristics of the surface finish of the paper—gloss, its ability to accept and retain ink for example—these sizing agents are the ones that tend to be acidic and ultimately are the ones that are perhaps the main culprits in the degradation of paper products.

Alternatively, there are alkaline sizing agents or other additives which represent an alkaline chemical nature which provide both the same surface preparation characteristics as do the acid types of sizing agents, but which lend themselves to a vastly longer-term, we'll say preservative, type of product.

The role of each of these with respect to recycled or virgin paper is fundamentally independent, to answer your second question. That is to say, recycled paper or virgin paper can be manufactured and/or ultimately finished through either course of action and, thus, there is no bias against recycling or recycled paper products to the extent that we are now aware in the ultimate quality or finish of the paper product.

That is also a question which perhaps can be addressed by some of the manufacturers that I understand are on your later panel.

Mr. NAGLE. So I assume then that the thrust of what you're saying is that EPA is encouraging where it fits recycled paper.

Mr. DENIT. Yes, sir.

Mr. NAGLE. And I'm sorry but I couldn't discern from your testimony, are you also encouraging by your guidelines the use of acid-free paper, whether it be recycled or not? Are you going the second step?

Mr. DENIT. Not explicitly. The way we are dealing with that in terms of our guideline is that the agencies—the thrust of the need for our guideline is based upon a procuring process which does not inherently bias itself against the use of recycled paper. Thus, an explicit specification that says this paper must be made from virgin paper is basically foreclosed by the statutory requirement.

On the other hand, what we are suggesting is that the procuring agency—in this case, any procuring agency—write the specifications for the paper they need and if those specifications cannot be met by a recycled grade paper, then so be it. They, the agency, have met their obligation under the statute and would fulfill, we think, the spirit of the requirement.

Mr. NAGLE. Why suggest? Why not require that where the paper to be used could be recycled paper it shall be used, rather than may be used?

Secondly, why not require that where paper is used, whether virgin paper or recycled paper, that it be acid-free or alkaline

paper? Why don't you just require it instead of leaving it out there for each agency to kind of do its own thing? Then we get a uniform standard.

Mr. DENIT. I understand. Our statutory thrust is to deal with the notion of the recycling of the paper or the waste paper or the other postconsumer products, not to deal *per se* with whether or not the paper is acid-free or not.

Mr. NAGLE. Why not?

Mr. DENIT. The statutory thrust is that we are only to issue guidelines. And we cannot write specific requirements of that type.

Mr. NAGLE. But you have not—I'm not critical because I didn't know anything about this until this morning, but why not issue guidelines at least requiring, unless a compelling case can be made in the opposite, why not require the use of alkaline paper, whether recycled or whether it's virgin? If not requiring, urging, encouraging, promoting?

Mr. DENIT. With respect to the general issue of longevity of paper, we have both preamble language and a regulatory construct which we think leads to first and foremost EPA's encouragement that the paper be procured to fulfill its intended purpose. And as we note in our preamble, if the necessity is for an alkaline paper for a longevity or archival need, then that can be met by a recycled paper.

But our statutory authorities do not allow us to get at the issue of an absolute regulatory requirement that papers of any particular type, for example, be acid-free; merely that recycled paper products have an opportunity to compete in the marketplace against any virgin paper product for the same purpose.

Mr. NAGLE. Are you considering—since there doesn't seem to be an issue here of quality between alkaline paper and acid paper, is EPA giving any consideration to going one step further in its guidelines and suggesting that, irrespective of whether you use virgin paper or recycled paper, you use acid-free paper, alkaline paper?

Mr. DENIT. No, sir. We would suggest that's probably best left to the Joint Committee on Printing or the Government Printing Office or some others with more specific statutory authorities to deal with that.

I would further suggest that EPA will continue—and we have set up a hot line, for example, for people phoning in for information on manufacturers of recycled paper products—through technical advice and assistance, can promote the use of alkaline papers or longevity papers for those people making those kinds of informational inquiries. But we do not now contemplate regulatory changes along those lines.

Mr. NAGLE. Are you contemplating seeking statutory authority to be able to mandate the use of recycled paper wherever the two are equal?

Mr. DENIT. I am not aware that we are at this time, Mr. Chairman, but that's a question I would be pleased to take back to senior management of the agency.

Mr. NAGLE. There are two questions. One is, why not seek statutory authority that we use recycled paper? Number two, why not go a step further and require the use of alkaline paper where it

meets the requirements? And I'd like the agency's—I think the committee would be interested in the agency's response to that.

If we can solve the landfill problems and the preservation problem at the same shot, it makes sense to do it.

Mr. DENIT. Yes, sir, I understand. I should observe in all fairness, this is a relatively recently issued guideline. A lot of procuring procedures as well as other activities within the federal government and the manufacturers and the publishers and so forth—a lot of changes have got to be implemented before the full effects of this guideline could be felt, and I would merely like to observe at this point that very positive signs along the lines about the thrust of your inquiry right now are already showing up. The Government Printing Office is in the process of framing some procurements involving recycled paper. The Joint Committee on Printing has already communicated to EPA that with respect to items such as brochures and booklets and things that we may produce respecting solid waste issues we could expect some more expedited assistance by the committee in procuring those kinds of paper products, and I further understand that later on the committee will be hearing testimony from a manufacturer, for example, which produces book and encyclopedia-grade papers already using recycled paper products and do meet the basic archival test.

So I think a lot is in motion, but I'll be pleased to carry the chairman's question back and the agency can communicate and follow up to the committee.

Mr. NAGLE. Now I see that we've been joined by the very distinguished colleague from California, Mr. Brown, who has an interest in this. He's indicated to me he doesn't have any questions, but at any time that you do I want you to feel free to sail forth.

Dr. Sparks and Dr. Shahani, I have in front of me a publication I picked up from the Library of Congress. It is simply titled "Burke's Speeches." It is so old that I cannot find who the publisher was, but I note that the note from James Burke, Edmund Burke's son, was noted December of 1853, and the book is a composition of some of Edmund Burke's—that distinguished conservative member of Parliament in the late 1700s—speeches.

I would like you to look at this book and tell me in the status of deterioration where it's at.

Dr. BILLINGTON. While they're doing that, I would just add on this last point that the Library of Congress is very anxious to work, as I said in my testimony but very briefly, with the Committee on Printing to devise a new standard for procurement of paper by the GPO.

It isn't just a question of alkaline content. It's a question of verification by laboratory tests to determine if it's suitable. There's apparently a number of complex factors.

So I think this is a very important area. Where you want to see the action taken is, of course, for the Congress to determine, but we do think a standard has to be developed—our specialists can talk in more detail—to ensure that paper of inferior quality, whether it's recycled or not, will not be used by federal agencies. That will be an important leadership step. I invite my colleagues to talk in more detail while we're on this very important subject.

Mr. NAGLE. Could somebody just lay out for me the scheme of—if we wanted to do this—how would we get it done? Is it an EPA jurisdictional matter? Is it Government Printing? Where is it at?

Dr. SHAHANI. The Joint Committee on Printing determines the standards for procurement of paper by the government and that would be the route to go, just like our colleague here has suggested.

The way we would go forward is to work with the Joint Committee on Printing and revise existing standards, make them so that we get what we need. We need paper that lasts. So there should be an aging test, a laboratory aging test, to see that the paper does last indeed, at least in the laboratory.

Right now we do not have that test. The present standards ask for alkalinity, two percent alkaline reserve, and that is only one of the requirements. Alkalinity is not everything. I can make pretty bad paper with two percent alkaline reserve. So that would be, one, an alkaline aging test, and, two, to ask for paper that is strong enough to begin with. There should be a floor for the properties of paper that we buy and it should last.

Mr. NAGLE. How does that tie in to the EPA on the use of recycled paper?

Dr. SHAHANI. Well, if they had recycled paper that was made from good stock, it would pass the test. If they had recycled paper made poorly from bad stock, they could have an alkaline bleach in it left over and that would provide an alkaline reserve apparently, if you just tested for the alkalinity.

Mr. NAGLE. So as laudatory as the steps EPA has taken is, it's not enough to simply ask that recycled paper be purchased where possible; it's recycled paper of sufficient quality be utilized.

Dr. SHAHANI. Exactly.

Mr. NAGLE. You wanted to get into this, Mr. Denit?

Mr. DENIT. Yes, sir, if I may go back to your earlier question and then comment on the second thing.

The kind of administrative structure has already been outlined. That is to say the Joint Committee on Printing is basically the point of origin for the requirements through the Government Printing Office. The Office of Federal Procurement Policy in the Office of Management and Budget is that organization which is charged in our statute for assuring federal agency cooperation with the procurement of recycled paper products. I want to be sure to add that for the record.

With respect to the other element of the inquiry here, bear in mind even if the Office of Solid Waste has chosen to procure or to publish a bifold, as we did, on the value of recycling in our whole solid waste management crisis, we simply go to the Government Printing Office through our own printing personnel to procure a quality of paper that is suitable for a bifold handout for people of a general informational nature. We do not necessarily, but could, write a specification ourselves that said the bifold must be of sufficient texture to assure longevity through frequent handling if it were to be, for example—we anticipated a major use by grade school children or other fairly rough handling. We can write those specifications in and GPO would then procure for our purposes a paper grade, be they recycled or otherwise, that would meet rough handling specifications.

Similarly, any procuring agency can direct that they need encyclopedic paper quality books or particularly archival grade paper for the purposes of a publication. That would simply be written into the specification. As long as it's without prejudice to the potential use of recycled paper or even if prejudiced against the use of recycled paper but documented, our statutory mandate and guidelines are fulfilled.

Mr. NAGLE. I handed this publication out there. Can you tell me when it was published?

Dr. SHAHANI. I don't know. I just looked at the quality of the paper. I don't know who published it and where it was published. I didn't look for that.

But the paper is in pretty bad shape. It's quite brittle and must be handled gently while reading it if it must be read.

Mr. NAGLE. Well, I called the Library of Congress. Assuming this volume were of significant interest, is this one you would preserve? And if so, where is it on the timetable of preservation? Because it's almost unusable now.

Dr. SHAHANI. If it were a rare book, it would require work on itself. It must be preserved in its original format.

If it were not a rare book, then it would be microfilmed and discarded in the condition it is in.

Mr. NAGLE. Dr. Sparks, do you want to get into this? Do you want to see the book?

Dr. SPARKS. I would like to see the book. It's hard to say where it is in the queue for microfilming. Microfilming is done based on people doing surveys of the collections and seeing which books are brittle. Then, as the microfilming program goes along you pick those books out and film them.

Mr. NAGLE. Well, I was surprised. I called for books on Burke. I called for biographies of Burke and speeches of Burke, and that's one of the ones the library sent over. I was surprised, just as a note, that the last biography of Burke was in 1931—that has just been corrected this year. There is a new biography of Burke out. You may want to get it and add it to your collection, Dr. Billington. You already have it I understand.

Dr. SPARKS. I've seen a lot worse than this, but this is a candidate for microfilming, and typical of the three million volumes that we have that are in this brittle stage. This is the problem right in front of you that we're talking about.

Dr. BILLINGTON. I think the answer to your question, though, is that as far as turning things into microfilm we do it both actively and passively so to speak. That is, passive is when somebody notices a volume—a user notices a volume that is embrittled, as you have noticed this. We then try to attempt to see if it can be preserved in its original form or microfilmed, depending on how rare it is as an individual artifact.

But we also do active inventorying of the collections to see whole categories of things that have to be microfilmed.

So we both respond to those that are noticed by users and we have an active inventorying policy to make a more comprehensive microfilming program. A great deal of microfilming goes on in this country and we coordinate closely with the Committee on Preservation Access which coordinates other research libraries. The Library

of Congress, roughly speaking, has done about two-fifths of the microfilming done in the entire country. So we are really, by far, the principal actors and the main determinants of what can be determined.

But we do have an active program as well as a response to conditions like this where an individual user notices. But this may very well trigger a search into a whole category of yet undiscovered horrors of this kind that we are constantly coming up against.

Mr. NAGLE. Dr. Sparks wants to tell everybody in the room that this book is overdue. We don't want to hear that.

[Laughter.]

Dr. SPARKS. It looks to me like it was published in Ireland in 1853.

Mr. NAGLE. That was my impression from it, but that leads to two questions. Number one, what's the preservation of microfilming?

Dr. SPARKS. The preservation of the film itself?

Mr. NAGLE. Yes. How long does microfilming last? I mean, are we just buying time?

Dr. SPARKS. You're buying time and you're buying hundreds of years. Good quality microfilm will last two to three hundred years as far as we know now, but it's quite stable. You have to store it correctly and take care of it, like anything else.

Mr. NAGLE. Then, Dr. Billington, that leads to my next question. I'm not critical of the condition of that volume. I didn't bring it for that purpose. It just was on my desk and it seemed like a good illustration.

But what's the criteria for selection for preservation versus microfilming? Obviously, it's easier for me to read a volume than it is for me to go over and read the microfilm.

Dr. BILLINGTON. Well, we have a committee, the Collections Management Division, which has an active inventory project that in fact does this.

Of course, ultimately the criterion is whether or not it is important to preserve it either because it is rare or because it is—many of the things we have are unique—or whether it's important to have it in its original artifactual form.

I might add that microfilming—I think increasingly forms of electronic storage are going to be the ultimate technique. That's why we try to do an integrated procedure. But with the rapid pace of embrittlement, microfilming on the cost factor is the only interim solution for a great many of these embrittled things at the moment. But we have a division which actually makes these determinations in consultation with the curators of the different collections and then we, in turn, coordinate our microfilming with the Committee on Preservation and Access which basically coordinates the major research libraries' programs which have increased in recent years due to grants from the National Endowment for the Humanities to the research libraries. So that has been an important supplement and that's integrated.

But I think the big problem with microfilming is that it isn't terribly user-friendly. To put it in the kindest, gentlest fashion, scholars don't like to use it. They get headaches. It's blurry and so forth. But it does last for quite a while.

However, I think the long-range future preservation lies increasingly in the optical disc and electronic formats which we are increasingly using, and our new American memory project, for instance, which we hope to initiate, is both a preservation and a dissemination technique. The great advantage of the optical disc technologies is that they will permit not only preservation—oftentimes in sharper form than the original, unlike microfilm—but also widespread dissemination to other libraries. And we think that's an important frontier for the Library of Congress.

Mr. NAGLE. I'd like to pick up one question and then we're going to have to dismiss this panel. We're going to have to go run vote, and then we'll come right back and we'll take the last panel or the third panel.

As I asked Mr. Vonnegut and Ms. Goldsmith, in terms of the state legislatures, it seems to me that the libraries could be a great source—not just the Library of Congress and not just the Library of Medicine, but across this country—you've got public libraries, you've got school libraries, you've got state university libraries, you've got state libraries, city libraries. Is there any organized effort by librarians on this issue in terms of a national or generic organization or specifically by different colleagues in positions similar to yours?

Dr. BILLINGTON. Well, there's a number of them. The American Library Association, Association of Research Libraries. The Library of Congress is the international headquarters for the International Federation of Library Associations. Miss Merilee Smith, who is here in the background, is the designated international coordinator of preservation efforts. So we are sort of a central switchboard for the international effort and we are, of course, in close consultation with the American Library Association and the Association of State Libraries, which play an important role because of their closeness to the legislatures. They, in turn, are particularly interested in the function in relationship to legislatures and the Congressional Research Service. Mr. Sparks can speak in more detail.

Dr. SPARKS. Jim mentioned most of the things. I think in general it's quite true that libraries are well organized on the preservation issues and are very concerned about them and this is international as well as national. You get a lot of support from those groups and many of us at the Library of Congress are involved with those preservation groups in these national organizations.

Mr. NAGLE. I thank you for that. We're going to break now. I have one request for you. As I requested of the EPA and I'd like the GPO also to join in this and the Library also, if there are changes in your standards or in your requirements, different policies adopted in the course of this first session of the 101st Congress, I would appreciate it—I don't know if one is empowered to ask a continuing question, but I would like to be personally and I'd like the staff to be continually updated on this so that we can monitor and be of assistance should the opportunity arise, and also so this issue just doesn't stop. We have a hearing and everybody gets aware of the problem, but I think we've got to push further and try to find a solution and be helpful to the solution.

So if you would continue to advise our staff and if you'd advise me personally, then I think also Mr. Brown in California who also

has an interest in this would also appreciate that information so that we can continue to monitor this onward and see what more, if anything, can be done. It would be very, very helpful to us.

Mr. BROWN. Before Mr. Billington leaves, I want him to know that I didn't bug him about the diethyl zinc process on purpose. I think you ought to be able to go ahead and complete that process successfully. I hope you do.

Dr. BILLINGTON. Thank you very much, Mr. Brown. I appreciate your interest in this whole question.

Mr. NAGLE. We will recess to vote.

[Recess.]

Mr. BROWN. The subcommittee will resume its sitting.

The third panel, Mr. Jenifer, Mr. Hughes, Mr. Lawrence, and Dr. Lyne will assume the appropriate posture.

Mr. Nagle has been temporarily detained and asked me to start the meeting off with you gentlemen.

I'd like to have you begin, Mr. Jenifer, if you would.

STATEMENT OF JOSEPH E. JENIFER, ACTING PUBLIC PRINTER, GOVERNMENT PRINTING OFFICE; ACCOMPANIED BY GEORGE COLLINS, MANAGER, QUALITY CONTROL AND TECHNICAL DEPARTMENT, GPO; GRANT MOY, GENERAL COUNSEL, GPO; AND JACK WOOLLEY, LEGISLATIVE AFFAIRS OFFICER.

Mr. JENIFER. Good morning, Mr. Chairman.

I am pleased to be here this morning to present the views of the Government Printing Office on paper preservation and related research and technology. With me this morning, to my right, is Mr. George Collins. the manager of GPO's quality control and technical department. I also have with me sitting behind me, our general counsel, Mr. Grant Moy; and Legislative Affairs Officer, Mr. Jack Woolley.

Mr. Collins' responsibilities include paper testing and the development of recommendations for paper standards used by the government.

In the interest of time, I will briefly summarize my prepared statement which has been submitted for the record.

Mr. BROWN. Without objection, the full text will appear in the record and we appreciate your abbreviating it if you will.

Mr. JENIFER. Thank you. The invitation to appear before the subcommittee asked several specific questions about the use of permanent papers by GPO which I will attempt to answer briefly.

First, with regard to the use of permanent paper in publications destined for the depository library program, the majority of the titles sent to depositories in recent years have been in microfiche. Hard copy publications printed on alkaline or other permanent papers have also been shipped to depositories but only when the publishing agency has specified the use of such papers in their requisitions for printing. Often, however, these papers are not specified even for publications which are of enduring research value.

To remedy this problem GPO is currently developing procedures to ensure that agencies are informed of their options to use alkaline and other permanent papers for their publications.

As to whether permanent papers are readily available for government purchase, the answer is a qualified yes. Currently, we estimate that the portion of alkaline papers present in the total amount of paper used each year for government printing approaches 30 percent Thus, in those instances where Congress or a federal agency has specifically requested the use of alkaline paper, we have been able to meet those requests.

We have also been able to meet requests for papers that comply with the standard for permanent paper established by the American National Standards Institution. For example, the Library of Congress and the National Institutes of Health have printing programs which require the use of these papers.

The Joint Committee on Printing has established a paper standard to meet these requests. In fact, the recent bibliographical directory of the U.S. Congress was printed on papers that met this standard.

I should point out, however, that, in our opinion, not all alkaline papers available on the market today can be considered truly permanent papers. Most mills are producing alkaline papers in which the fiber has been supplemented with precipitated calcium carbon filler. These papers will print well, but do not possess the greater fiber strength and folding properties that are required of papers manufactured for archival use. While most of these alkaline papers will indeed survive longer in storage than acidic papers, we believe that their lower fiber strength does not qualify them as truly permanent papers.

Other barriers remain to the use of permanent papers for all government publications. Although the paper industry is moving toward alkaline processes as the predominant paper production method, we have yet to see the emergence of alkaline papers in an abundant, readily available supply.

Accordingly, higher cost is still generally, although not always, associated with their use.

Where truly permanent papers are concerned, higher costs are generally the rule. At least for the short term, these costs will be problematic where the establishment of paper standards under Title 44 requirements are concerned, since those standards are set for the least expensive papers that meet the government's needs.

They also will be problematic for government printing contractors who tend to buy paper in small lots. Since the government itself accounts for roughly 2.5 percent of the annual paper consumption in the United States, we are not really in a position to drive the paper market toward alkaline processes, much less processes that will produce enough supply of truly permanent papers to substantially reduce their cost.

Where the EPA's recent guidelines on the use of recycled papers are concerned, we won't know their full impact until they go into effect next month. As there are only two mills, to our knowledge, that currently produce recycled paper stock with the alkaline process, however, it may be difficult to produce such papers within the cost guidelines established by Title 44 and the EPA guidelines, at least for the short term I should say.

While it is possible, though, that these papers could be manufactured to the current JCP standard for permanent papers, there is

still a great deal of uncertainty about the actual impact of the EPA guidelines.

To summarize GPO's role in the use of paper for government publications, it is the Joint Committee on Printing that sets the standards of papers that federal agencies use for government printing. GPO procures paper in accordance with these standards for both in-house production and direct mill shipments and ensures that the paper used in government printing contracted out to the private sector meets these standards.

In turn, the agencies select the paper they want to use from the available standards. For its part, GPO can and will encourage the use of alkaline and other permanent papers for publications which the agencies themselves deem to be of enduring value, but the final decision on use rests with GPO's Customers' Agency under the current law.

The final point I've made in my prepared statement concerns the options that agencies increasingly have to use electronic information technology to enhance the transmission, storage and retrieval of government information products. The Office of Technological Assessment pointed out in a recent study of federal information dissemination that these products in all probability are ways of ensuring archivable life of documents.

Although there clearly is a problem with the deterioration of important government documents due to acid papers, electronic information technologies should be considered as an alternative to enhance document preservation, particularly for those publications which have only marginal or short-term research value.

Mr. Chairman, that concludes my statement and I will be happy to respond to any questions the subcommittee may have.

[The prepared statement of Mr. Jenifer follows:]

United States Government Printing Office
Washington, D.C. 20401

STATEMENT OF

JOSEPH E. JENIFER

ACTING PUBLIC PRINTER

BEFORE THE

SUBCOMMITTEE ON SCIENCE, RESEARCH, AND TECHNOLOGY

COMMITTEE ON SCIENCE, SPACE, AND TECHNOLOGY

HOUSE OF REPRESENTATIVES

ON

PAPER PRESERVATION AND RELATED RESEARCH AND TECHNOLOGY

May 4, 1989

MR. CHAIRMAN AND MEMBERS OF THE SUBCOMMITTEE:

Thank you for the opportunity this morning to place in the record the position of the Government Printing Office (GPO) on the use of alkaline papers for Federal printing and publications.

The issue of paper preservation is receiving increased attention at the GPO. Mr. S. Bruce Scaggs, GPO's Assistant Public Printer (Operations and Procurement) addressed it in a paper delivered before the Paper Preservation Symposium conducted last October by the Technical Association of the Pulp and Paper Industry (TAPPI), a copy of which I have attached for the hearing record. In addition, this subject was addressed during recent hearings before the House Subcommittee on Legislative Branch Appropriations on GPO's appropriations request for Fiscal Year 1990. My remarks here today substantially reflect the statements I made at that time.

Alkaline Papers

In recent remarks on permanent papers, Senator Pell noted that "we are faced with a national problem of deterioration of valuable publications because of the high acid content of paper in use since the mid-19th century." Where Government documents are concerned, there has been a growing awareness at GPO of the need to counter this problem through the increased use of alkaline papers. Alkaline papers generally have a much longer life than acid papers since the chemicals that tend to cause degradation at acid pH's have either been significantly reduced or totally removed from the paper production process. Depending on other archival conditions, these papers can be a major factor in the longevity and preservation of paper format documents.

Under Title 44 of the U.S. Code, the Joint Committee on Printing (JCP) establishes the quality of paper used in Government printing and binding. GPO's role in paper usage is limited to buying the paper and supplying commercial printing contractors with appropriate standard samples. The JCP paper standards are established around those papers that are readily available on the commercial market which are the least expensive grade suitable for the Government's use. The standards currently in use include a standard for alkaline papers, although the actual use of these papers depends on their conformity to other job specifications as established by the customer agency.

According to recent estimates, GPO purchases approximately 100 million pounds of paper per year for inhouse production use and blank paper sales, including direct mill shipments. GPO's commercial printing contractors purchase approximately 660 million pounds per year for GPO work.

The recent TAPPI symposium estimated that as much as 15 to 30 percent of the paper produced in the United States is by the

alkaline process. Since the Government uses a relatively representative mix of U.S. papers, alkaline-process papers are present in the papers used by GPO and GPO contractors in the same proportion. Therefore, according to recent estimates, GPO purchases approximately 15 to 30 million pounds of alkaline paper per year and GPO contractors purchase anywhere from 99.2 to 198.3 million pounds of alkaline paper per year. The total of 477,000 tons of paper covered by JCP specifications that is purchased each year by the Government, however, represents only 2.2 percent of the 22 million tons of printing papers consumed each year in the United States.

Until recently, a readily available supply of alkaline papers was limited by production technologies in the paper industry itself. Moreover, since Government printing constitutes only 2.2 percent of the total annual consumption of paper in the United States, the Government has not been in a position to demand increased availability of alkaline papers. Fortunately, the paper industry today is converting to increased production of alkaline papers as an economical alternative to acid production methods. As commercial availability improves for both Government inplant use and commercial printers, more extensive use of alkaline papers in Government printing and binding will be possible, depending on the continued inclusion of these papers in the JCP paper standards and customer agency job specifications.

GPO has already made it a special project to encourage the use of alkaline paper within the authority of Title 44. Actions that have been taken include the development of a JCP Government Specification Standard, JCP A270, that will offer the Government user the assurance that the product satisfies the criteria of American National Standards Institute (ANSI) Z 39.48 for archival paper. Our paper experts have also provided the JCP with a new specification, JCP A-61,for smooth finish, high quality acid-free opacified book paper. These specifications encompass most of the commercial commodity grades of calcium carbonate loaded paper now being sold. To encourage greater use of alkaline papers by Federal publishing officials, GPO's Customer Service Department has purchased the video tape "Slow Fires" which dramatizes the problems caused by acid papers in the Nation's libraries, and has been showing it to Federal publishers. Until more favorable market conditions emerge for alkaline papers, however, they are likely to entail increased costs for Federal publishers, at least in the short term. These increased costs, I should add, will also make it difficult to incorporate more of these papers into the JCP paper standards, which, again, are based on the least expensive grades of paper that are suitable for the Government's use.

Recycled Paper

GPO recently initiated an affirmative program for the procurement of newsprint, catalog/directory, high grade printing and writing papers, and paperboard containing the maximum amount of waste or recycled paper practicable, in compliance with guidelines established by the Environmental Protection Agency (EPA) under Section 6002(e) of the Resource Conservation and Recovery Act of 1976, as amended. Under these guidelines, GPO is required to solicit and acquire, if possible, a minimum content of postconsumer recovered materials or waste paper for the various grades of paper we use to meet our operating requirements. For 10 JCP specifications, from 5 percent to 80 percent content of postconsumer recovered materials are required, and for 33 JCP specifications a 50 percent minimum content of waste paper is required. In any instance, however, recycled papers are not to be used if their cost exceeds the cost of papers that otherwise would be used were recycled papers to be unavailable.

Since the EPA guidelines do not go into effect until next month, their actual impact on the Government's paper usage remains unknown at this time. However, it is reasonable to project a potential conflict between the resource conservation goals of the EPA regulations and the emerging national program to encourage the use of permanent papers in Government documents because the chemicals and bleaches used in manufacturing recycled papers tend to increase acidity. Although the EPA found that it is feasible to procure acid-free papers while meeting the recycled paper content standards, it was able to identify only two paper mills currently producing acid-free recycled papers. Thus, until more paper mills begin to utilize acid-free production methods for recycled papers, there is likely to be conflict between these two goals.

Electronic Media Storage Alternatives

One final point I would like to make before the Subcommittee concerns the inclusion of electronic information technology alternatives in discussing the issue of preserving Government documents. Although it did not comment directly on the paper preservation issue, the recent Office of Technology Assessment (OTA) report on Federal information dissemination, Informing the Nation: Federal Information Dissemination in an Electronic Age (October 1988) examined in great detail the opportunities that await the Federal Government for the compilation, transmission, storage, and retrieval of Government information by virtue of electronic information technologies. OTA concluded that although ink-on-paper is currently the predominant information medium used by the Government, the Government has already begun the transition to significant use of electronic technologies and formats, and OTA projects an increasingly rapid transfer of Government publications, reports, and other documents to these technologies in both the

short (1-3 years) and long (5-10 years) terms. For those Government publications which are not deemed to be of enduring research value, these technologies provide Federal agencies with an expanding range of options to provide low-cost information services to the American public.

While I believe strongly that the Government should make every effort to ensure the longevity of information products for the use of the public, I also believe that the cost and utility of paper preservation efforts should be balanced against the opportunities provided by information technology advancements to ensure that Government information remains as accessible as possible, in terms of cost, timeliness, and utility, to the broadest range of public users.

Mr. Chairman, I thank you once again for the opportunity to address this Subcommittee, and I will be pleased to answer any questions the Subcommittee may have.

Mr. BROWN. Thank you very much, Mr. Jenifer. We will hear from all of the panel members first and then we'll ask questions. Mr. Hughes, do you want to go ahead?

STATEMENT OF LAWRENCE HUGHES, CHAIRMAN, ASSOCIATION OF AMERICAN PUBLISHERS.

Mr. HUGHES. Mr. Chairman, Members of the Subcommittee, and ladies and gentlemen, thank you for allowing me to appear before you on this important matter. I have given the committee a written statement presenting in full detail the position of the Association of American Publishers and its strong support and commitment to the use of acid-free papers so that the literary and cultural heritage of our country may be preserved. What I will do here is summarize that statement's main points.

May I identify myself by saying that the job I get paid for is my position as chairman of the Hearst Corporation's book publishing operations, but today I appear before you to represent the Association of American Publishers as its chairman.

That association consists of approximately 250 members. Those members publish books of every kind and variety and they are located across the breadth of our country. They publish books of poetry, general fiction, non-fiction, textbooks, medical books, professional scholarly and scientific works, dictionaries, Bibles, mass market paperbacks, art books, journals, looseleaf books—you name it and I'm sure one of our member companies publishes it.

The total book industry is now an approximately $12 billion a year business. Approximately 50,000 new titles or revisions of old titles are being issued annually in the United States. We believe our association membership represents approximately 70 percent of that volume.

We, as publishers, applaud and welcome the interest of this subcommittee and the Senate under the leadership of Senator Pell in the matter of book preservation because, despite more modern forms of communication, books remain the depository of the cultural and literary heritage of our nation.

For a number of years, our association has had a deep concern in the matter of book preservation, particularly in the use of acid-free paper. Going back to 1979, when the Council on Library Resources set up a committee to study production guidelines for book longevity, our association has been involved. Mr. Herbert Bailey, a distinguished publisher, was the chairman of that first committee.

In 1986, the same Council on Library Resources established a Commission on Preservation and Access and our association has been in close contact with them and this year we actively endorsed the conscious-raising efforts of the New York Public Library to get all hard cover book publishers to use acid-free paper when available, and we issued a resolution which is included in my written statement and I believe Barbara Goldsmith made reference to it in her testimony.

Now six months ago, our association undertook a survey of its membership on the use of acid-free paper. Fifty-five publishers replied and almost all our large members responded. We estimate that those replying represent about one-third of the total sales of

U.S. book publishers and almost one-half of the volume of our members.

This survey showed that in all categories of hard cover publishing and in all categories of what we call trade or quality paperback publishing the overwhelming percentage of books currently being printed are using acid-free papers. Forty-six companies replied that they were using acid-free papers, seven responded they were not, and two responded they were considering its use.

Of the companies using acid-free paper, the figures run from a low of 80 percent usage for general consumer hard cover bound books, including fiction, to a high of 98 percent usage for elementary and high school textbooks, and 100 percent for Bibles.

Is this representative of our industry as a whole? Well, my best guess is that these percentages are at the high end for the whole industry and even for our membership. However, they show a definite trend.

Mass market paperbound books, which were referred to earlier here, for example, do not use acid-free paper except in rare instances. These are the kinds of paperbacks you will find on racks in airports and in supermarkets and usage of acid-free paper for these publishers was only 15 percent in our survey. The reason for this is that acid-free papers are more expensive than the ground wood paper used in low cost paperbacks. An increase in paper cost for that type of book would price that type of book out of the market.

However, even the New York Public Library agreed that the low cost paper for mass market paperbacks was not an area of primary concern. And it should be noted, as Barbara Goldsmith did earlier, that most mass market paperback titles are reprints of books previously published in hard covers and those works of lasting merit which are originally published in this format almost always find their way into hard covers eventually.

So in the future, the only factors that stand in the way of 100 percent usage of acid-free paper by hard cover book publishers are availability and cost.

In respect to availability, I am told that by the end of 1990 or certainly in 1991 there will be enough acid-free paper available from manufacturers so that except for rare and unique circumstances plenty of this type of paper will be accessible for book publishers. This has not been true in the past.

Publishing is a low-profit business and a few cents additional cost often makes a real difference. However, I am also informed that there is no reason to believe that the cost of acid-free paper should be any more than the cost of the current acidic papers being used by some hard cover publishers.

In short, we have the happy news for you and for us that the written word will be much better preserved in the future than it has been in the last hundred years. Acid-free book paper will soon be available in sufficient quantity and at reasonable cost so that all book publishers can use it without economic hardship and I believe they will do so.

And as often happens, however, when a problem begins to draw public attention, more questions arise than were originally anticipated. What, for example, do we precisely mean by preservation?

How long is long enough? What do we really want to preserve? What do we mean when we talk of acid-free paper as opposed to permanent or archival paper or other terms coming into common usage?

I think we need to mark with some precision the boundaries of our inquiry.

Finally, though I believe that the question of acid-free paper in the use of books is on its way to a satisfactory and happy solution, we must make the effort to preserve our written heritage, one that involves all segments of the written word, not just the book. In fact, I am told that the paper used for publishing American books constitutes one percent or less of the total paper produced for the purposes of communication in this country.

In closing, I want to assure you that our association and book publishers throughout this country heartily support the effort to use the kinds of papers that will preserve our cultural heritage. You will have our cooperation in that effort.

Thank you for allowing me to appear.

[The prepared statement of Mr. Hughes follows.]

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Statement by
LAWRENCE HUGHES
CHAIRMAN, HEARST TRADE BOOK GROUP
and
CHAIRMAN, ASSOCIATION OF AMERICAN PUBLISHERS
Before the
Subcommittee on Science, Research and Technology
of the
Committee on Science, Space and Technology
U.S. House of Representatives
May 4, 1989

Thank you for the opportunity to testify on this important issue. I am gratified, both as a publisher and as a citizen, that the legislative eye of Congress is being focused on the need to develop a coherent and rational strategy to safeguard for future generations access to that part of our cultural and literary heritage which is embodied in the printed word.

I have the honor of speaking this morning on behalf of the 250 book publishers who are members of the Association of American Publishers. Located in every region of the United States, we publish the vast majority of printed materials sold to American

schools and colleges, libraries, bookstores, business and industry, and through direct-to-consumer channels such as book clubs. We represent publishers of hardcover and paperback books in every field: poetry, fiction, general non-fiction, textbooks, reference books, religious, scientific, medical, technical and scholarly publications. AAP member firms also publish journals, looseleaf services, computer software and a range of educational and classroom materials.

Much has been written and said recently about "brittle books" - volumes published over the last century and a half which are literally turning to dust. The Library of Congress estimates that fully one-quarter of its 14 million volume collection are too fragile for normal use and 77,000 books in its collection enter the endangered category each year. Studies indicate that some 40 percent of the volumes in major American research collections will soon be too brittle to use. These statistics have to be disturbing to anyone who cherishes the written word. It is particularly distressing for those of us who publish books and see in them the perfect medium for disseminating knowledge, exchanging ideas and encapsulating creative genius.

The problem of brittle books is traceable to changes in paper manufacturing techniques that occurred early in the last century when the basic fiber source for paper shifted from hemp and linen rag to wood pulp and an alum/rosin compound was introduced as a paper sizing agent. It is this alum compound, breaking down into

acids and attacking the chemical bonds that hold the wood pulp fiber together, that is the villain. I claim little knowledge of paper manufacturing technology but we are fortunate this morning to have with us one of the industry's preeminent book production experts, Mr.Howard Goldstein, Vice President and Production Director of the Simon and Schuster Consumer Group. He will try to answer any technical questions you may have.

The challenge of preserving existing volumes through deacidification programs, while exremely urgent, is not the subject of our discussion today. Rather, we are seeking ways to insure that important elements of our cultural and literary heritage now being published or yet to be published will be durable enough to withstand the assault of time.

The publishing community has had a deep concern in the matter of preservation and a deep commitment to that cause. For example, in 1979 the Council on Library Resources established a committee to develop production guidelines for book longevity. Herbert S. Bailey, Jr., then Director of Princeton University Press and an Association member, was chairman of that committee. Also, AAP has been in close contact with the Commission on Preservation and Access, formed in 1986, whose mandate includes fostering a greater public awareness of the need for preserving the physical repositories of our literary and cultural heritage. AAP member publishers specializing in scientific and scholarly journals have also been involved. In January 1987 a number of them participated

in a day-long symposium sponsored by the National Library of Medicine on the use of permanent paper for biomedical literature.

As often happens when a problem begins to draw public attention and a search for solutions gets underway, our newly-raised consciousness generates more questions than could have been anticipated. What do we mean precisely by "preservation"? How long is long enough? What do we really want to preserve? What do we mean when we talk of "acid-free" paper as oppsed to "permanent" paper or "archival" paper, or any of the myriad terms coming into common usage? We need to mark with some precision the boundaries of our inquiry. We cannot begin to formulate a basic, long-range policy without defining our parameters.

In order to better understand the realities of our industry and to better define current industry practice with regard to "acid-free" paper, AAP, in the winter of 1988, undertook a survey of its membership. The survey elicited responses from 55 publishers, including almost all of our large members. The results of the survey are listed below. The first column indicates the category of book, the second the percentage of those books now being printed on acid-free paper according to our survey.

ASSOCIATION OF AMERICAN PUBLISHERS

Survey on the Use of Acid-Free Paper

General Books	
Adult - Hard Cover	80%
Trade Paperbacks	88%
Juvenile - Hard Cover	86%
Art	98%
University Press	
Hard Cover	96%
Trade Paperbacks	96%
Professional/Scholarly	
Dictionaries	97%
Encyclopedias	96%
Atlases	90%
Scientific/Technical	85%
Almanacs	75%
Travel Guides	90%
Looseleaf Publications	93%
Monographs	86%

College Books	
Undergraduate Textbooks	84%
Graduate Textbooks	82%
School Books	
Elementary/High School Textbooks	98%
Other	
Bibles	100%

In short, we seem to be well on the way to using acid-free paper all the time on all hard cover books and quality paperbacks. Availability was the main concern of those publishers who did not use acid-free paper on all their books. Although several of our respondents noted that they found no significant difference in cost between acid-free and acidic paper, others did cite cost as an important factor when determining whether or not to use the acid-free paper. Book publishing is an industry with a small profit margin and even small increases in production costs can spell the difference between making or losing money on a book. Two publishers responded by noting that sometimes their materials required constant updating and are therefore not suitable candidates for printing on permanent paper. It is interesting to note, however, that many almanacs and travel guides, the type of book that needs annual revision, are already being published on acid-free paper.

The use of acid-free durable paper has been the subject of much discussion by our AAP Board of Directors. At its meeting on February 16, the Board issued a statement in connection with an event, later held by the New York Public Library on March 7, to "help raise the nation's consciousness about the acute problem of paper deterioration." At that time a number of authors, publishers and others joined in a formal statement declaring their commitment to a national effort to promote the use of permanent paper. The statement by the AAP Board reads as follows:

> "The Association of American Publishers urges its members to support the efforts of the New York Public Library's Committee of Authors and Publishers for the Preservation of the Printed Word and to declare their commitment to use acid-free paper, subject to availability, for all first printings of hard-cover books in order to preserve the printed word and safeguard our cultural heritage for future generations."

It is essential to note the importance of the phrase "subject to availability" in the AAP statement. No matter how strongly we endorse the need to preserve the printed word and no matter how committed we are as publishers and citizens to this effort, we cannot as an industry commit ourselves to the use of any product

in the manufacturing process whose availability is in question. In a market-driven economy we cannot create a demand for acid-free durable paper unless we have the assurances and commitment of the paper manufacturing industry that such paper will be there when we need it at a cost that can be borne.

We believe that the key to 100% use of acid-free paper is availability. If enough is being produced there seems reason to believe that costs would be in line and that the book publishing business, which does prefer to use acid-free paper, would then use it all the time. I am told by experts that in 1991, perhaps even in 1990, sufficient acid-free paper will be available for books and all publishers of hard cover volumes will be using acid-free paper. Therefore, the problem of book paper that will last not just for decades but for centuries is well on its way to a solution that will satisfy publishers, librarians, the general public, and Congress.

Support is strong in the publishing industry for a policy to preserve the written word. We applaud the action of this Subcommittee in undertaking an examination of the issue. We support the principles behind Senator Pell's joint resolution in the Senate calling for a national policy on the use of permanent papers. But as I indicated, much practical work needs to be done. We need to examine how the standards for paper durability are to be established. Are standards applicable to one segment of the publishing industry inappropriate for another? Following the

January 1987 symposium at the National Library of Medicine, mentioned earlier in this statement, the Library established a Permanent Paper Task Force composed of paper manufacturers; commercial, academic and professional society publishers; printers; editors; librarians and preservationists. The Task Force was charged with developing a plan to encourage and guide the use of acid-free paper in the publication of biomedial literature. The question of standards is one that the Task Force found troubling. According to a report in the NLM newsletter: "The Task Force was concerned that the American National Standard for Information Sciences now available for permanent uncoated paper may be too rigorous and so could discourage efforts of publishers to look for paper which is free of acid. All agreed that a more flexible application of the standard would be desirable... Additional standards which are realistic and responsive to achievable goals in the making and use of permanent paper need to continue to be formulated." There are others, however, who disagree that the ANSI standards are too rigorous and therefore there still needs to be further discussion and consensus on what is practical and possible.

In concluding, I would like to reemphasize the need for care in approaching a long-term strategic policy. In preserving our written legacy for future generations, we need to establish what it is we want to safeguard, and what can be allowed to slip into impermanence without harm to society. We need to approach such questions as what constitutes permanence with precision and by

defining our terms, and then proceed from that point. I believe we must look carefully at the economic implications of our actions, and we must make this effort to preserve our written heritage one that involves all segments of our society, not just the book and library communities. In fact, I am told that the paper used for printing books constitutes less than 1% of the paper produced for the purposes of communication in this country. I can assure you that our membership will cooperate in this effort.

Thank you for allowing me to express these views.

Association of American Publishers, Inc.

aap

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ASSOCIATION OF AMERICAN PUBLISHERS

Survey on the Use of
Acid Free Paper

Fifty-five responses have been received to the Acid-Free Paper Survey.

---

1. What kinds of books does your company publish? Answers to question one are summarized on pages three and four (Question #1 Column)

2. Is your company using or is it considering the use of acid-free paper in any of the books indicated in Question #1?

   - 46 responded yes
   - 7 responded no
   - 2 are considering

   In what categories are you using or considering the use of acid free paper?
   Answers to question two are summarized on pages three and four (Question #2 Column).

3. If the decision was to use acid-free paper, what was that decision based on?

   - 30 said the decision was based on corporate policy
   - 13 said the decision was based on comparative price of papers
   - 5 said the decision was based on instructions from the editorial or other departments
   - 2 said acid-free paper offered the best quality
   - 2 said the paper mills just happen to ship acid-free paper

   (Some respondents answered more than once)

   If the decision was not to use acid-free paper, what was that decision based on?

- One respondent sighted cost as their reason for not using acid-free paper.
- One said their publications had limited shelf-life as well as limited shelf-space.
- The third respondent commented as follows:

"Why should we bear expense and effort today so museums and libraries 200 years from now can have "acidized books." I suspect their technology to de-acidize will be better than our capability to publish acid-free. Ever heard of micro-fiche?"

4. If you use acid-free paper in any of the books identified above, what is the percentage of titles?
Answers to question four are summarized on pages three and four (Question #4 Column).

What is the estimated total percent of books (titles) published by your company in which you use acid-free paper?
Answers are on page five.

5. If you use acid-free paper, do you make a statement to that effect or do you use the infinity symbol inside a circle to indicate that the paper meets the criteria for permanence set forth in American National Standard Guidelines:

- 24 said they use a statement
- 22 said they do not use a statement
- of the 24 who use a statement only four use the infinity symbol.

One respondent commented, "We use statement "Printed on Acid-Free Paper," symbol as defined by ANSI implies additional additives by paper mills."

Where is the symbol located in the book?

- 18 said that the statement appears on the copyright page
- six did not say where the statement appears.

6. General Comments:

Availability was the main concern for those who do use acid-free paper. Several respondents noted that although there is not a significant difference in the cost of acid-free paper compared to that of acid-based paper, acid-free paper is not always readily available. Two respondents said that cost was an important issue when determining whether or not to use acid-free paper.

Two respondents indicated that it may not be necessary for all publications to be printed on acid-free paper due to the rapidly changing nature of some industries which makes it necessary to constantly update materials.

ASSOCIATION OF AMERICAN PUBLISHERS

Survey on the Use of Acid-Free Paper

	Question #1	Question #2	Question #4
General Books			
Adult - Hard Cover	21	17 (1)*	80%
Soft Cover	22	13 (1)	98%
Juvenile - Hard Cover	12	8 (2)	86%
Soft Cover	13	1	64%
Art	9	6 (1)	98%
Mass Market Paperback	8	1	15%
Coloring	5	1	15%
University Press			
- Hard Cover	14	13 (1)	96%
- Soft Cover	15	13 (1)	96%
Professional/Scholarly			
Dictionaries	17	13 (2)	97%
Encyclopedias	10	9 (1)	96%
Atlases	11	6 (1)	90%
Scientific/Technical	27	22 (1)	85%
Almanacs	3	1	75%
Travel Guides	6	2	90%
Journals	19	13 (2)	90%
Looseleaf Publications	7	2	93%
Monographs	21	16 (1)	86%

* Answers in () are number of publishers considering the use of acid-free paper. Answers not in () are those publishers currently using acid-free paper.

	Question #1	Question #2	Question #4
College Books			
Under Graduate Textbooks	22	19 (1)*	84%
Graduate Textbooks	18	17 (1)	82%
Study Guides	15	4 (2)	74%
Workbooks (e.g., consumable materials)	5	2 (3)	66%
School Books			
Elhi Textbooks	11	9	98%
Study Guides	8	4	84%
Teachers Editions	11	8	67%
Workbooks (e.g., consumable materials)	12	3 (1)	67%
Other			
Bibles	1	1	100%
Construction	1	-	100%
Annual Report	1		
Indexes	2	1	100%
Directories	1	1	100%

4. What is the total percentage of titles published by your company on acid-free paper?

# of Companies	%
1	1
2	10
1	15
1	17
1	20
2	24
1	30
1	50
1	65
1	67
2	70
1	80
1	85
4	90
4	95
3	98
1	99
2	100
1	Some
TOTAL 31*	

*Note: 24 companies did not respond to this part of question #4.

Mr. BROWN. Thank you very much, Mr. Hughes.
Mr. Lawrence, do you want to go ahead?

STATEMENT OF ROBERT A. LAWRENCE, DIRECTOR, PLANNING, AQUISITIONS, AND GOVERNMENT AFFAIRS, THE P.H. GLATFELTER COMPANY, SPRING GROVE, PENNSYLVANIA.

Mr. LAWRENCE. Yes, sir. Mr. Brown, and other Members of the Committee, my name is Robert S. Lawrence. I am Director of Planning and Acquisition, and Government Affairs for the P. H. Glatfelter Company.

The P. H. Gladfelter Company is a manufacturer of fine papers whose products are directed toward the book publishing, envelope, and specialty markets. We operate three paper mills, one in Spring Grove, Pennsylvania, another in Neenah, Wisconsin, and a third in Pisgah Forest, North Carolina. We are the largest producer of book publishing paper in the country and also the largest producer of recycled book paper. We are in the somewhat unique position in that each mill has a different source of fiber. In Spring Grove, we produce most of our pulp with a sulfate pulping process. In Neenah, our major fiber source is waste paper which is processed in a state-of-the-art deinking and rebleaching system. In Pisgah Forest, we use market pulp for our printing paper grades and have a flax pulp mill to manufacture pulp for specialty papers. Another important feature is that all three mills use the acid-free or alkaline papermaking process.

The P. H. Glatfelter Company is one of the pioneers in alkaline papermaking. For us, the conversion from acid to alkaline was driven by economic, environmental, and marketing considerations. Wet end paper chemistry that permitted the manufacture of alkaline sized printing papers developed during the late 1950s and early 1960s. In 1966, we instituted an extensive research program into alkaline papermaking to determine the benefits of using that technology to preserve our position as the premier manufacturer of book publishing papers in the United States. Our research showed that the alkaline system produced papers that were stronger and permitted better filler or pigment retention than acid papers. Since additional strength was not needed by the marketplace at that time, we continued our experiments and found that we could improve the smoothness and therefore the printability of our paper by decreasing the amount of fiber in the sheet and increasing the amount of filler. Filler is less expensive than fiber, so we found ourselves in the enviable position of being able to produce a better product for a somewhat lower cost. In addition, we confirmed that the alkaline process had environmental benefits as we could use less water per ton and our waste treatment plant could be operated more efficiently. Our research also showed that alkaline papers had increased longevity, however, longevity was not of major interest or concern to most of our customers at that time.

We also found these benefits could not be obtained without cost. While the capital costs to switch to alkaline papermaking were not significant for us, the costs associated with learning how to make high quality paper in an alkaline process were. Despite this, we were determined to make the switch from acid to alkaline and did

so at our Spring Grove mill in 1974. In 1979, we acquired the Bergstrom Paper Company in Neenah, Wisconsin, and shortly thereafter converted their recycling mill to an alkaline process. Recently, we acquired Ecusta Corporation's mill in North Carolina which had been alkaline since its inception in 1939 and had also started to produce alkaline printing papers during the 1970s. Since our mills were converted, we have produced hundreds of thousands of tons of alkaline publishing paper and have been extremely pleased with the results, as have our customers.

Other paper companies have recently discovered the benefits of alkaline papermaking and are converting their mills in increasing numbers. Therefore, capacity to meet the needs of those who desire increased permanence in books and other documents where longevity is important should be readily available.

Turning now to the subject of recycling, I would like to put to bed the myth that alkaline papermaking and recycling are mutually exclusive, because they are not; although there are those who, for whatever reason, are espousing that point of view. We believe we are uniquely qualified to speak on this subject since we produce alkaline papers with both virgin and recycled fiber. Our Neenah mill is almost totally devoted to the manufacture of alkaline book publishing papers from recycled fiber. We know of no reason nor do any of our tests indicate that alkaline recycled papers have a longevity any less than equivalent alkaline papers made with virgin fiber. In fact, we are producing book publishing papers in our Neenah operation that meet specifications that are as stringent as the alkaline book publishing papers we produce with virgin fiber at our Spring Grove mill.

Our alkaline recycled paper is being sold for a wide variety of applications, including law books, religious publications, dictionaries, encyclopedias, trade books, and elementary, high school and college textbooks.

Another popular misconception is that if paper is made extra strong to begin with it will last longer. Our experience is that there is no connection between longevity and strength. What is important is that the paper be manufactured initially with sufficient strength to meet the needs of the market and that it retain much of that strength throughout its life. The alkaline reserve built into alkaline papers is the key factor that ensures longevity and strength retention. The American National Standards Institution, ANSI, recognized this fact and made strength measures optional in their permanent paper standards. The government's temporary new standard, JCP A270, is based on the ANSI standard but has made the ANSI strength measurements non-optional. Based upon our experience, in order to ensure that sufficient alkaline virgin or recycled paper is available to meet the permanence needs of the government, it is recommended that the government specifications be revised to conform to the ANSI specification.

[The prepared statement of Mr. Lawrence follows.]

TESTIMONY GIVEN BEFORE THE

SUBCOMMITTEE ON SCIENCE, RESEARCH, AND TECHNOLOGY

U. S. HOUSE OF REPRESENTATIVES

WASHINGTON, D. C.

MAY 4, 1989

BY ROBERT S. LAWRENCE

DIRECTOR
PLANNING, ACQUISITIONS, AND GOVERNMENT AFFAIRS

THE P. H. GLATFELTER COMPANY

SPRING GROVE, PENNSYLVANIA

My name is Robert S. Lawrence. I am Director of Planning, Acquisitions, and Government Affairs for the P. H. Glatfelter Company.

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Mr. BROWN. Thank you very much, Mr. Lawrence.
Mr. Lyne.

STATEMENT OF M. BRUCE LYNE, MANAGER, PRODUCT PERFORMANCE, INTERNATIONAL PAPER, TUXEDO, NEW YORK.

Dr. LYNE. When I presented my written testimony to the corporate counsel in our company, he said he had only one problem with it, and it was staying awake while reading it. So I intend to make amends today by slowing a few slides that highlight some of the more provocative issues on permanent paper and its supply.

[Slide No. 1]

While we are discussing today the supply of permanent paper, our industry uses the term alkaline papermaking, which is not synonymous. It's not synonymous for the reasons that Mr. Lawrence pointed out, and that is, in the ANSI definition of permanent paper there is also a durability standard relating to the tear strength and fold endurance of the paper.

However, it is fair to say that alkaline papermaking is synonymous with acid-free papermaking, as practiced in the United States, since all the manufacturers are using calcium carbonate in sufficient quantity to ensure an alkaline reserve.

[Slide No. 2]

I guess the good news that I bring to the committee is that alkaline paper will be in plentiful supply in the United States. International Paper Company is the largest paper manufacturer of fine paper in the United States, producing over 20 percent of the paper consumed in the uncoated fine paper field.

[Slide No. 3]

Here you can see the history of the conversion of our paper mills. We started experimentation with alkaline papermaking as early as 1984 and, as Mr. Lawrence of Glatfelter pointed out, the ability to convert relied on technical expertise. That is the hurdle to moving to alkaline papermaking. By 1990, by next year, we will be producing approximately 1,600,000 tons of alkaline uncoated fine papers. That's about 15 percent of the U.S. market. Another bit of good news is that in more recent discussions I've had with various technical groups in our company I can say publicly now that we intend to convert all of our uncoated fine paper mills to alkaline and that will probably occur by 1991. So that will be over 20 percent of the U.S. market.

[Slide No. 4]

Now I've been asked, of course, what was the incentive to go to alkaline papermaking. If you look at a sheet of paper under high magnification, you can see that it's made up of a fiber network, and those fibers have to be bonded together to make a coherent sheet of paper.

[Slide No. 5]

When you make the paper in an alkaline medium, the paper's fibers swell and conform to one another and basically you increase the area of contact and bonding. That makes a stronger sheet of paper. It has a higher tensile strength. So you have two options at that point, either to make a stronger sheet of paper with the same fibers as you would have used in the acid process, or you can add

more filler and come back to the same level of strength that you have in an acid sheet of paper.

[Slide No. 6]

Now it's extremely important to differentiate acid and alkaline papers in their physical properties. In the ANSI standard, which is going to be debated next week here in Washington by the International Standards Organization's Technical Committee 46 for incorporation in the ISO standards. In other words, to become an international trade term or the definition of permanent paper, they have incorporated a durability requirement. That is to say, there is a minimum tear strength and the tear is this mode of tear. We call it the Elmendorf tear in the paper industry. We must be very careful whether that mode of tearing has any relevance for the durability of books or other paper products.

Mr. NAGLE. Who is that in the photograph?

Dr. LYNE. Actually it's a strong man from our laboratory. It's meant to illustrate that that mode of tearing is very rare in the end use of paper. Usually the paper is torn in the plane of the paper. The same with fold endurance—how important is fold endurance for durability of, for example, books in libraries? I might also add that as you increase the bonding in paper with alkaline papermaking, you tend to decrease that tear strength; and similarly, if you incorporate recycled fiber into the paper, you decrease the tear strength. So again, some caution should be exercised in defining permanent paper or it may in fact impact the supply of acceptable paper to those who want it.

[Slide No.7]

Now, of course, the other major advantage to switching to alkaline papermaking is the incorporation of fillers. Fillers opacify paper principally and we are able to add more filler, which means that you can go to a lower basis weight—there's a great demand for lower basis weight papers for obvious reasons—by adding more filler and having the same opacity. Also, filler is less expensive than the paper fiber generally.

[Slide No.8]

Of course, the other thing about adding filler is one can change the printing characteristics of the paper. You can make it more uniform by filling it up with a mineral filler, in this case, of course, precipitated calcium carbonate.

[Slide No. 9]

The traditional filler for paper has been clay, which is a platey material. You see a variety of sizes and shapes here.

[Slide No. 10]

And in our alkaline papermaking, a great key to the financial success or the economic success of our conversion, has been the use of on-site production of calcium carbonate, the main filler, by the reaction of carbon dioxide and lime. Now these particles can be created in a range of shapes and sizes so that you can customize the paper to its end use. That's a great advantage to us as papermakers. The other thing is that these particles will break up very easily when the paper is cut or converted. That means that it's a very unabrasive material.

[Slide No. 11]

Now also by filling the paper we have certain energy savings, particularly in the drying of paper. It's easier to dry filler than fiber.

[Slide No.12]

One of the other aspects of alkaline papermaking is that, of course, we have to control the penetration of liquids into paper. We do that traditionally by adding sizing agents that have been mentioned earlier by the previous panel. The sizing agents that were used in acid papermaking—still are used in the acid papermaking—are derived from rosins that come from pine trees and this material is acidic.

[Slide No. 13]

Furthermore, it has to be anchored to paper by aluminum sulphate and we add up to 70 pounds per ton of this material to our paper.

[Slide No. 14]

This is the bad actor that causes the deterioration of the fibers.

[Slide No. 15]

In the alkaline papermaking process, we use reactive synthetic sizing agents. We use much less sizing and it reacts directly with the fiber. We do not need to use alum. Also, we can choose a wide variety of synthetic sizing agents, again to customize the paper for its end use. This is another great advantage in alkaline papermaking.

[Slide No. 16]

Now one other aspect I'd like to touch on, particularly from the pollution point of view, is that papermaking wet end chemistry—and I should, of course, explain what I mean.

[Slide No. 17]

Paper is made by draining a dilute suspension of fibers and filler through continuously rotating wire.

[Slide No. 18]

Here you can see some of the material coming—the water with some of the fine material in that papermaking stock—coming through the wire, and this has to be recirculated.

In the acid papermaking process, you build up aluminum rosinates in the system that have to be removed to the receiving water treatment system. Alkaline papermaking does allow more closure of the system. You're not carrying aluminum rosinates around. However, it would be fair to say there is really no difference in acid and alkaline papermaking in terms of the water that's ultimately sent out to the receiving rivers and streams.

[Slide No. 19]

Last but not least, recycling. This is a bit of a thorny issue and I think I have to disagree with my colleague from the Glatfelter Company at least on two points regarding recycling. We have to be very careful what we mean by the definition of recycled fiber.

Slide No. 20]

The EPA has made it clear that it would like to see more postconsumer waste incorporated in paper for recycling purposes and postconsumer waste, of course, is a mixture of acid and alkaline paper, predominantly acid at this moment in time.

[Slide No. 21]

Another source of recycled fiber are clippings from envelopes and also trimmings from books. In this case, the trimmings from a carton of fully bleached fiber carton. This type of fiber is as good as virgin fiber in the sense that it is pure, it's white, and it's unmixed in terms of acid and alkaline. This is very easy to recycle. You can take alkaline material from clippings and recycle it into the alkaline paper without any difficulty.

However, if you take mixed waste—there's only so much of this material that's available. That is to say, we could not find enough trimmings and clippings to make 50 percent recycled fiber in all of our alkaline production. That's simply impossible.

The difficulties in taking the mixed waste from municipal operations or business operations into the alkaline process is that you start incorporating those aluminum rosinates that are so much of a problem and these begin to precipitate in the alkaline papermaking process. So you would wind up with sticky spots in the paper if you reach anything like 50 percent incorporation.

[Slide No. 22]

Last but not least, in the recycling side, I've been talking and so has my colleague from Glatfelter been talking about chemically pulped fiber. We remove the lignin that was mentioned earlier from the fiber in the pulping process and liberate the fibers from the wood, as you see on the righthand side by dissolving 80 percent of the lignin and bleaching removes the rest of the lignin.

[Slide No. 23]

However, you can also prepare wood pulp fiber by grinding wood against the stone. You get a very brash fiber that is used, for example, to make all of the newspapers in the United States. This fiber is not suitable for permanence. It is the basis of about 50 percent by weight of the base stock used in lightweight coated papers. For example, for medical journals. Not only is this paper produced under acid conditions, but the resins that come with the wood in ground wood present a problem for the longevity of the paper.

[Slide No. 24]

I might add that the coating that is put on these papers is alkaline. Throughout the United States, all coatings are alkaline. But if these papers can be made permanent, then the base paper has to be ground wood-free. It must be a wood-free paper.

Thank you.

[The prepared statement, plus slides of Dr. Lyne follows.]

TESTIMONY OF DR. M. BRUCE LYNE
MANAGER, PRODUCT PERFORMANCE
INTERNATIONAL PAPER
LONG MEADOW ROAD
TUXEDO, NY 10987

Before the Committee on Science, Space and Technology
U.S. House of Representatives

on the Subject of Permanent Paper

May 4, 1989

Permanent paper implies paper made under neutral or mildly alkaline conditions (pH 7.0 to 8.5). This testimony will describe International Paper's position on the production of uncoated fine papers by the alkaline process in comparison with production by the traditional acid process (pH 4.0 to 5.5).

Approximately 11.3 million tons of uncoated fine paper was consumed in the United States in 1988. According to the Alkaline Advocate, Hercules Corporation, and our estimates, alkaline paper accounted for about 30 percent of this consumption.

International Paper produces over 20 percent of the uncoated fine paper in the United States and, as shown in Table I, it is in the process of converting most of its fine paper production to the alkaline process. The incentives for this conversion include:

- Precipitated calcium carbonate is the filler of choice for alkaline papermaking since it is about 15 percent brighter than clay and much more effective than titanium dioxide in creating paper opacity on a cost basis. In addition, precipitated calcium carbonate can be custom manufactured at the mill site from lime and carbon dioxide in a variety of particulate shapes and sizes suited to the end-use requirements of each paper grade. Unlike ground limestone, precipitated calcium carbonate is no more abrasive than conventional filler clay and it is much less abrasive than titanium dioxide. This is particularly important for converting grades such as envelope paper where dye and slitter knife wear is a critical property.

In addition to these advantages for commodity grades, precipitated calcium carbonate is a major advantage in the development of new fine paper grades having higher brightness, higher opacity or lower basis weight at comparable opacity, and low abrasivity at higher opacity.

Calcium carbonate cannot be used in an acid papermaking system.

Liquid penetration into paper must be controlled for efficient operation of the papermachine and for end-use such as printing. In the alkaline process, liquid penetration into paper is controlled by the addition of small amounts of reactive sizing agents. In the acid process relatively large amounts of rosin and alum (aluminum sulphate, a strong acid in water) must be added to achieve adequate sizing. Also, the alum is effective in anchoring the rosin to the surfaces of the fibers only under very acidic conditions (pH 4.0 to 5.5). This results in corrosion of the papermachine, difficulty in closing the papermachine water recirculation system, and in long term acid attack on paper fibers that leads to paper embrittlement. These problems are alleviated or eliminated with alkaline papermaking.

Papermaking fibers swell and become more conformable in a neutral or alkaline environment. Interfiber bonding is thereby enhanced resulting in a considerable increase in the tensile strength of paper. Thus, paper can be made stronger

under alkaline conditions at comparable filler levels to those used in acid papermaking, or more filler can be added in the alkaline process at comparable strength to the acid paper. In choosing higher filler levels, greater paper opacity and better print quality is achieved as well as savings in energy required to dry the paper.

Some of the constraints on the alkaline papermaking process include:

- It is not practical to recycle alkaline paper into an acid papermaking system, and acid paper can only be recycled into an alkaline system with great difficulty. Foam will be created in the former case, and wet-end chemistry in the papermachine becomes complex and difficult to control in the latter case. Thus, acid and alkaline papers must be totally segregated in recycling operations. Currently, pure alkaline recycling streams are only possible from converters' and printers' clippings and trimmings. Waste merchants will not accept mixtures of acid and alkaline papers.

- Considerable know-how is required to operate the alkaline papermaking process since the majority of dyes, retention aids, sizing, biocides, and other process chemicals used in the acid system are technically unsuitable and/or not cost-effective in the alkaline process.

- Alkaline papermaking is not currently suited to paper grades

containing significant amounts of lignin. These grades include newsprint, liner and corrugating medium, and lightweight coated magazine papers. Lignin turns brown in an alkaline medium, and dissolved and suspended organic compounds associated with lignin-containing pulps interfere with wet-end chemistry in the alkaline papermaking process. Thus, lignin-containing papers must also be segregated from waste paper to be used for recycling in the alkaline process.

While the improved interfiber bonding associated with alkaline papermaking is beneficial for strength properties such as tensile and fold endurance, it is deleterious for Elmendorf tear strength. Also, the addition of nonload-bearing filler to paper decreases tear, tensile, and fold endurance. Thus, a balance must be struck between improved print quality, opacity, and brightness on one hand, and adequate tear and fold endurance on the other hand in choosing the calcium carbonate filler level in alkaline papers.

Care should be exercised in setting specifications for permanent papers to reflect this difference in properties from those of conventional acid papers or it may be difficult or impossible for papermakers to meet the durability aspects of the specifications for permanent papers (e.g., ANSI Standard Z39.48-1984).

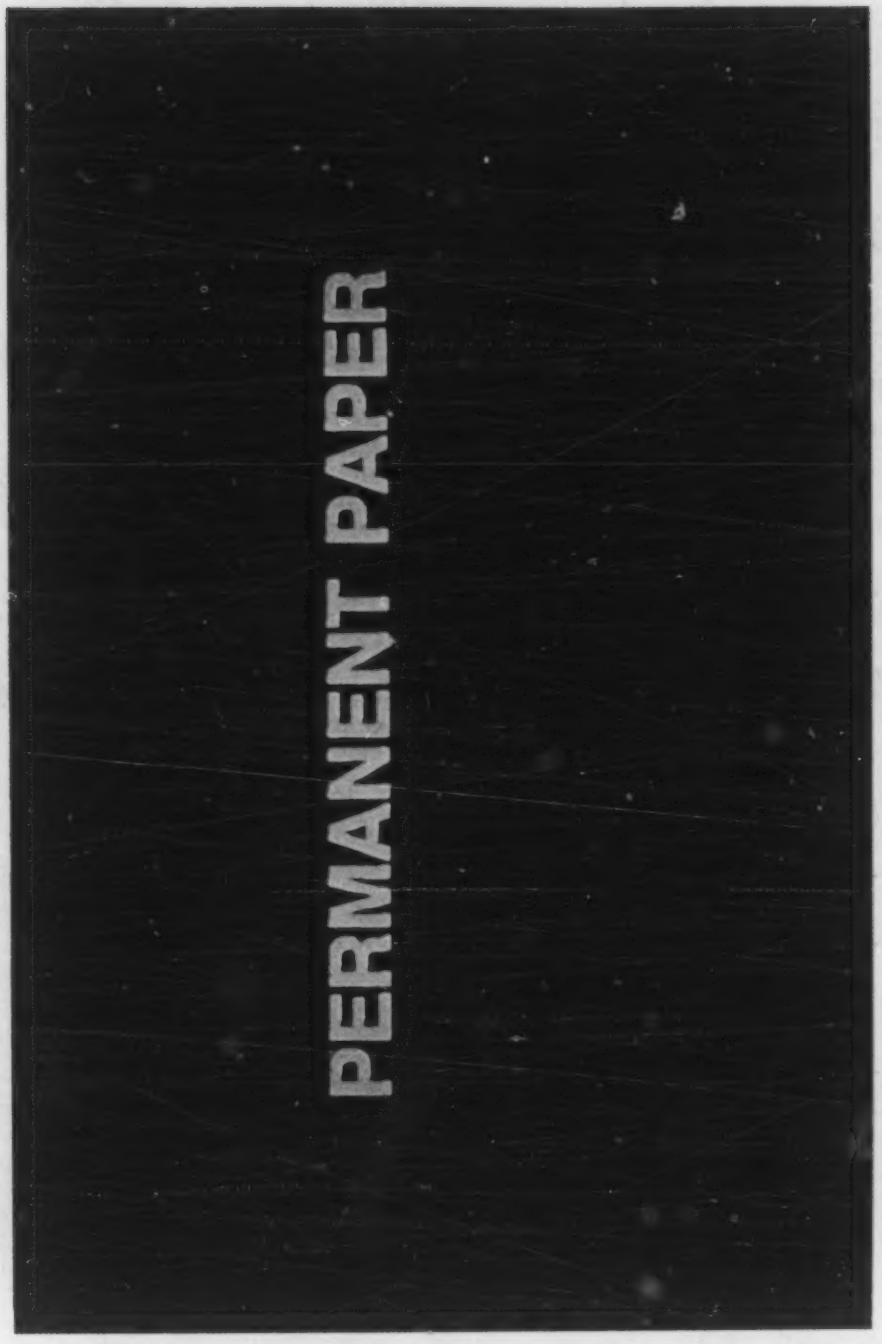
TABLE 1

INTERNATIONAL PAPER ALKALINE MILLS

MILL	LOCATION	CONV. DATE	TONS/DAY
Grays Harbor*	WA	Oct./86	375
Ticonderoga	NY	Nov./86	700
Erie	PA	May/88	600
Lock Haven	PA	Jan./89	725
Riverdale	AL	Feb./89	600
Mobile	AL	Sept./89	1300
Oswego	NY	Mar./90	220
		total	4520

Total alkaline production capacity for uncoated fine paper (mainly bond , offset, reprographics, envelope, and business forms grades) equals approximately 1,650,000 tons/year. In addition, one papermachine at Bastrop, Louisiana, and one papermachine at Georgetown, South Carolina may be converted in the future adding an additional 300,000 tons/year.

* Joint venture with ITT Rayonier


PERMANENT PAPER

ALKALINE PAPERMAKING

Mill	Location	Comp. Date	Tons/D
Grays Harbor	WA	~1984	375
Ticonderoga	NY	Nov/86	700
Erie	PA	May/88	600
Lock Haven	PA	Jan/89	725
Riverdale	AL	Feb/89	600
Mobile	AL	Sept/89	1300
Oswego	NY	1990	220
		total	4520 tons/day
		= approx. 1,650,000 tons/year	

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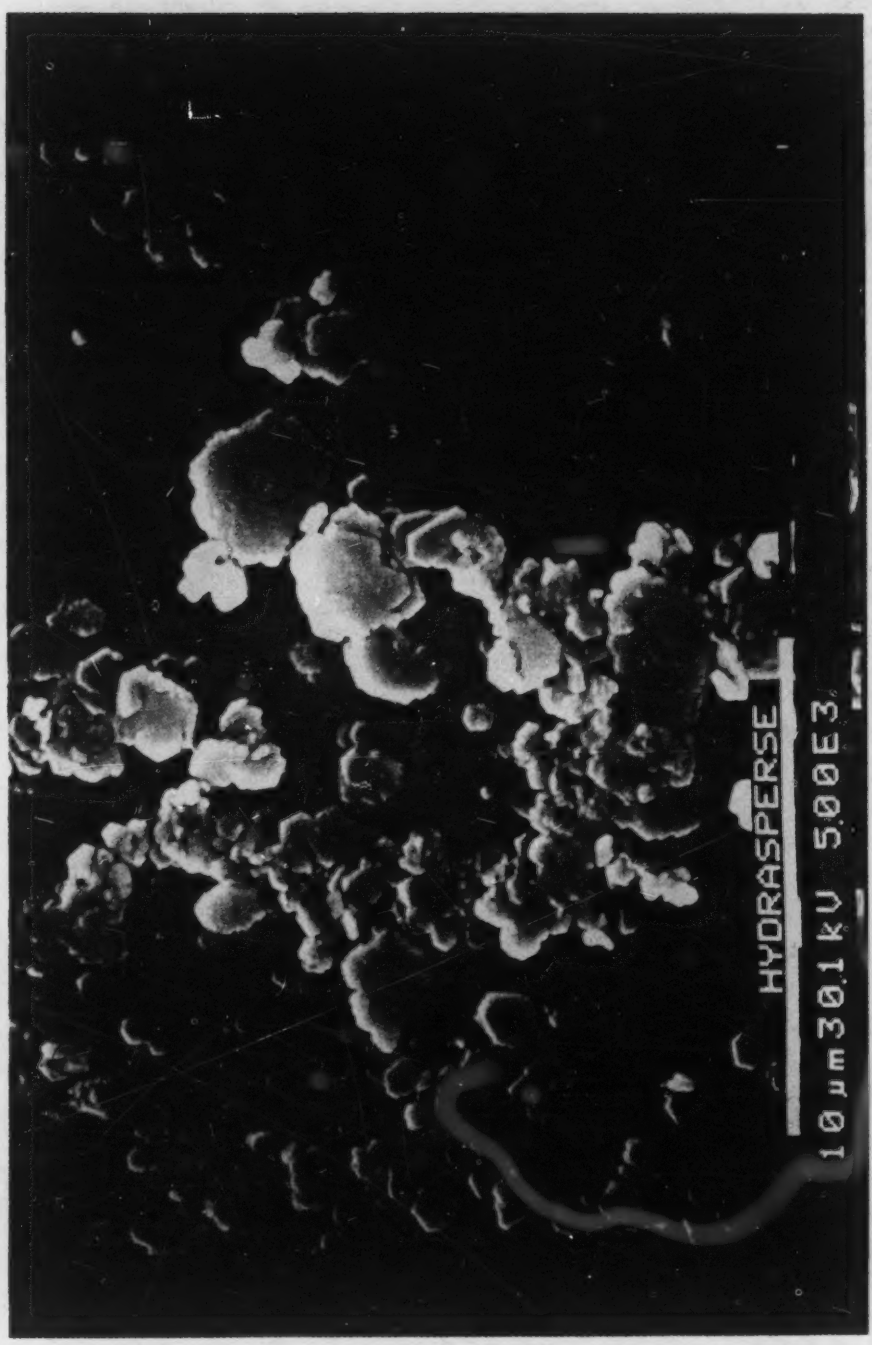
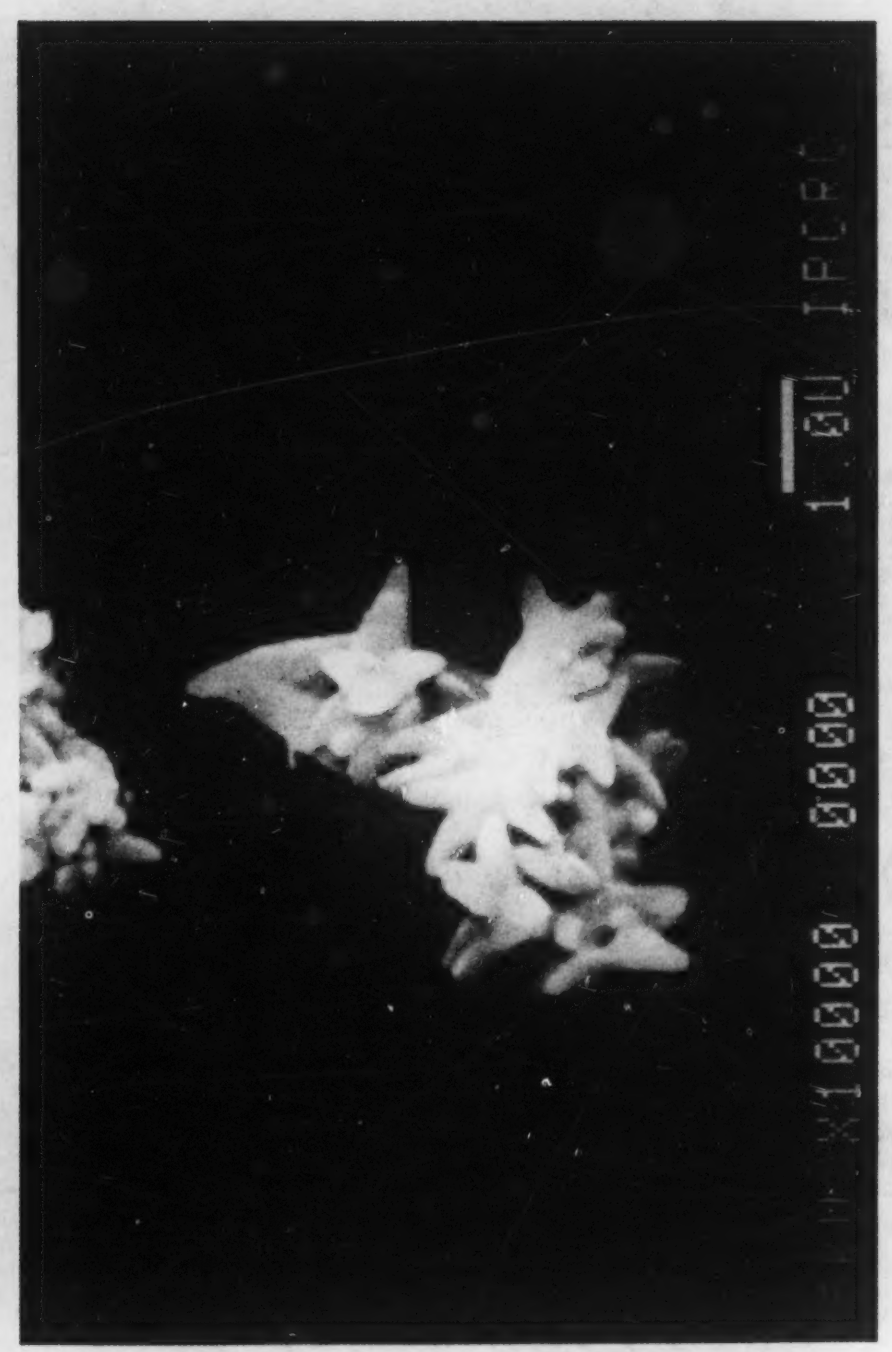
SMALL CONTACT AREA
LARGE CONTACT AREA

ergen Co

FILLERS
NO FILLERS


HYDRASPERSE
10µm30.1kV 5.00E3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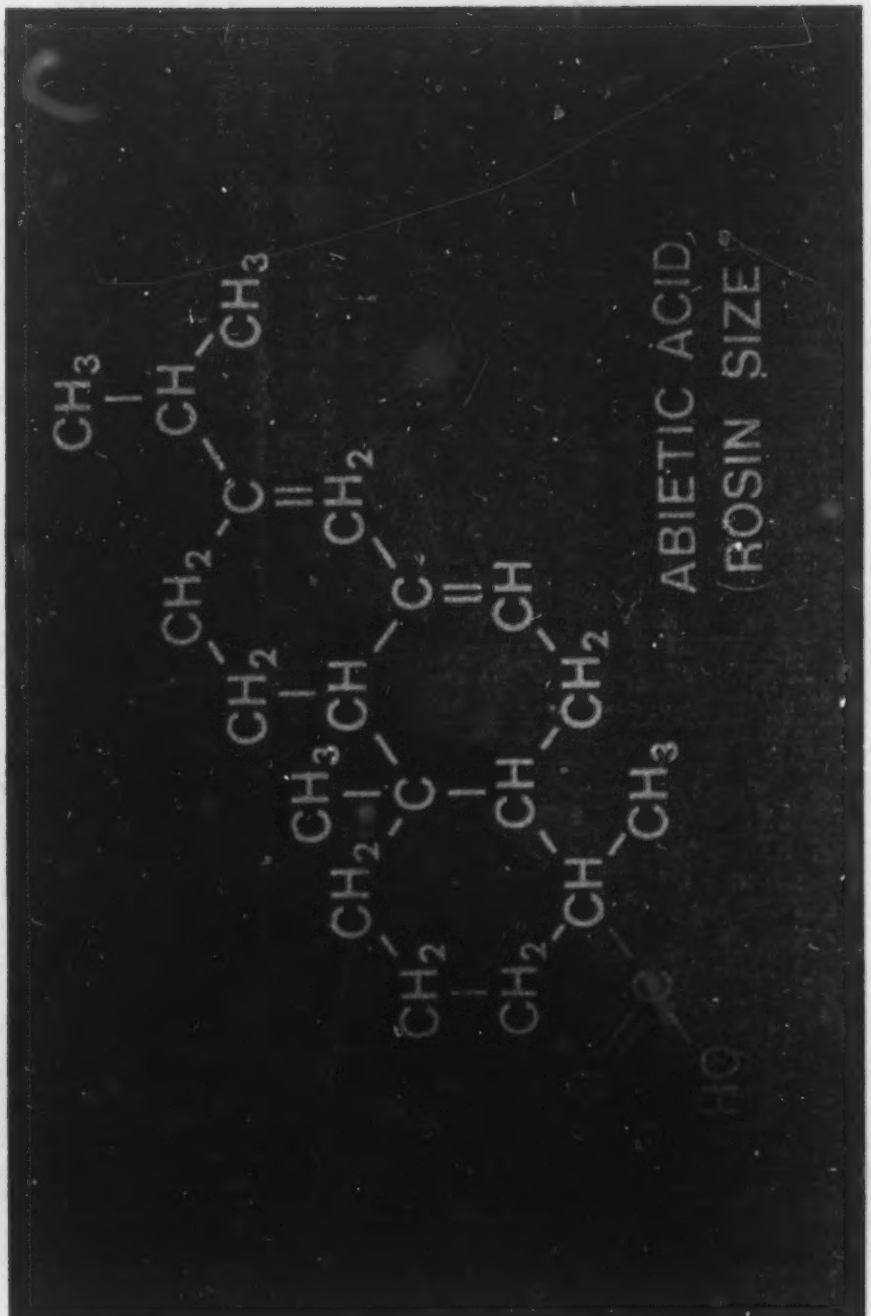
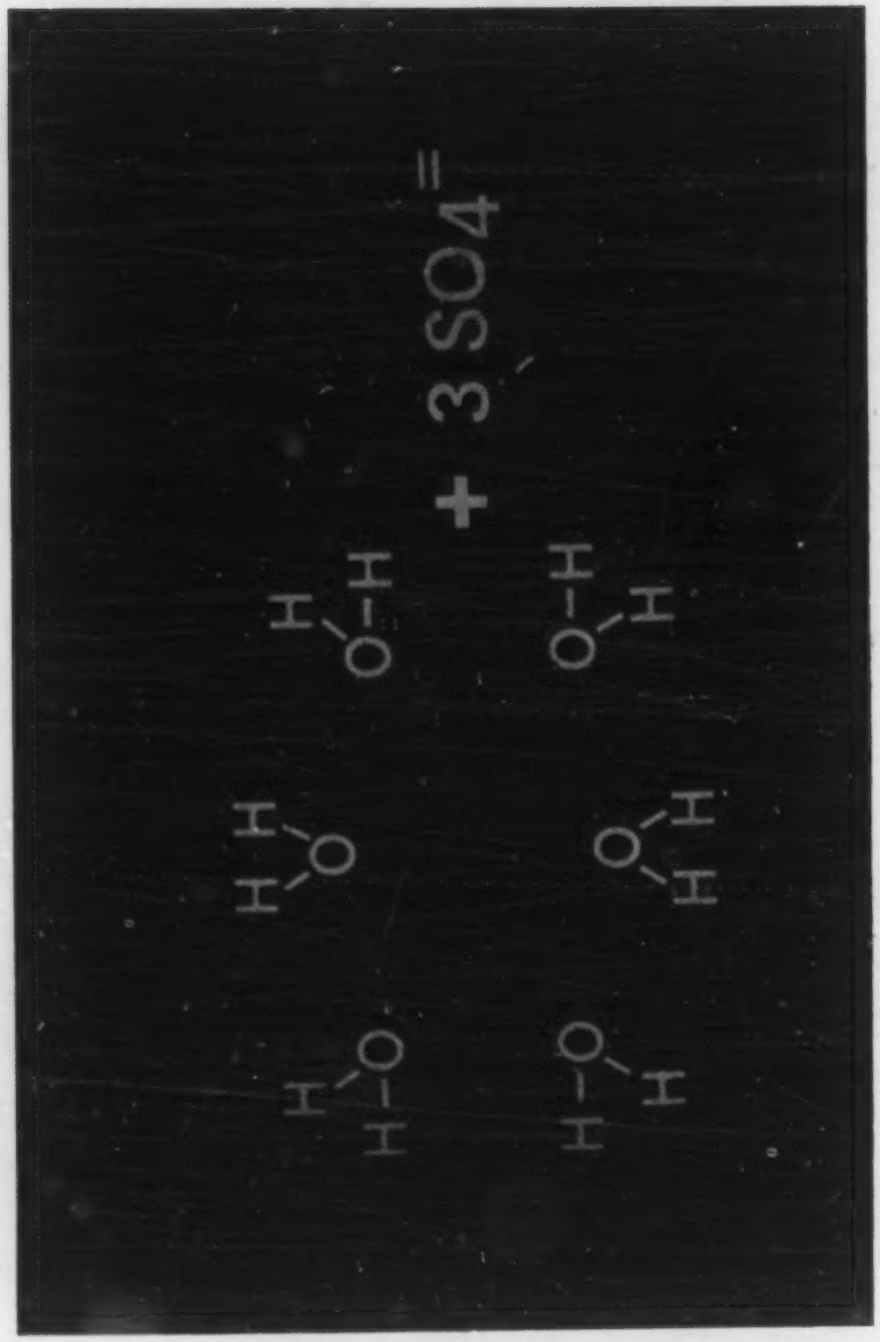
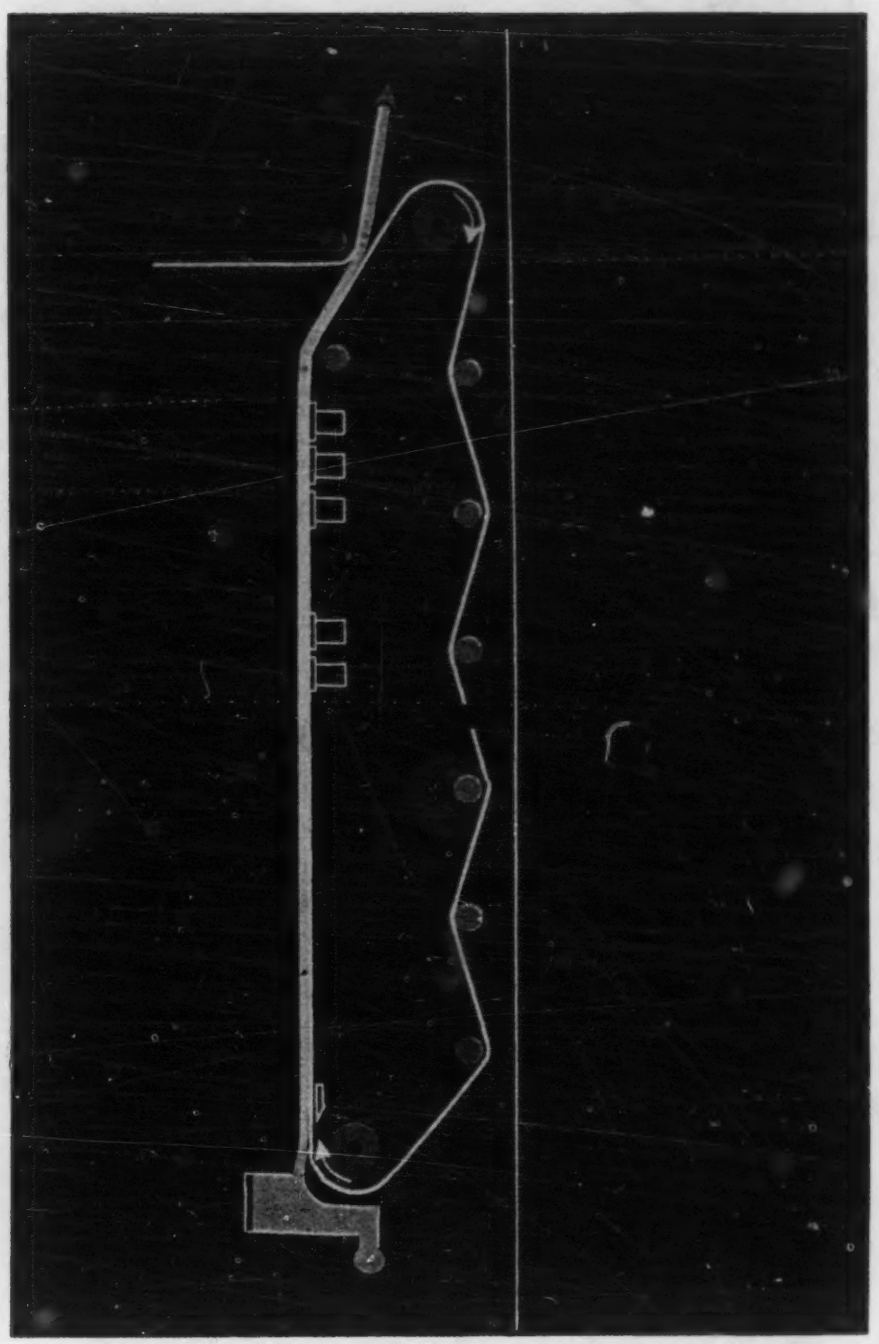

ABIETIC ACID
(ROSIN SIZE)

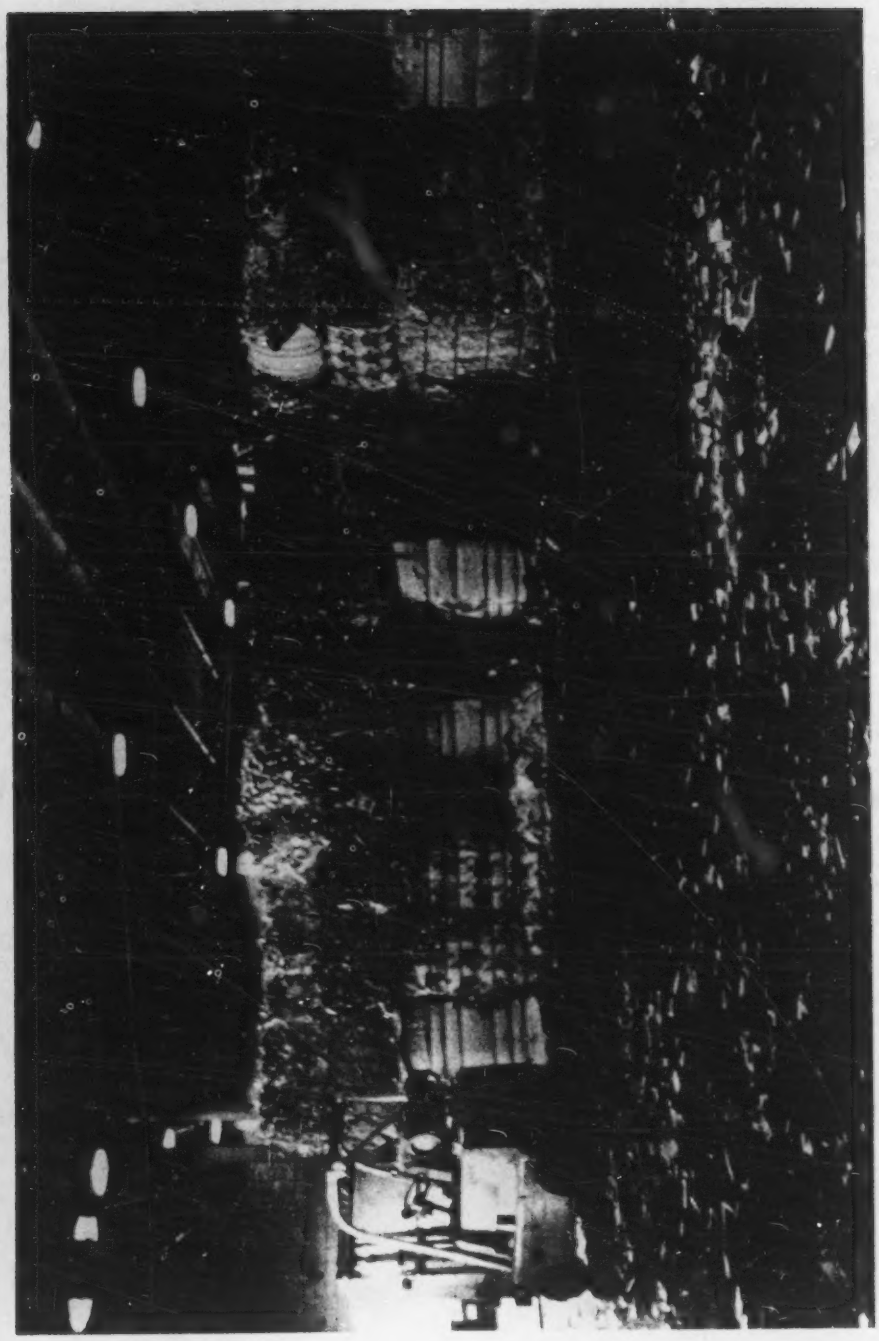

+ 3 SO4=

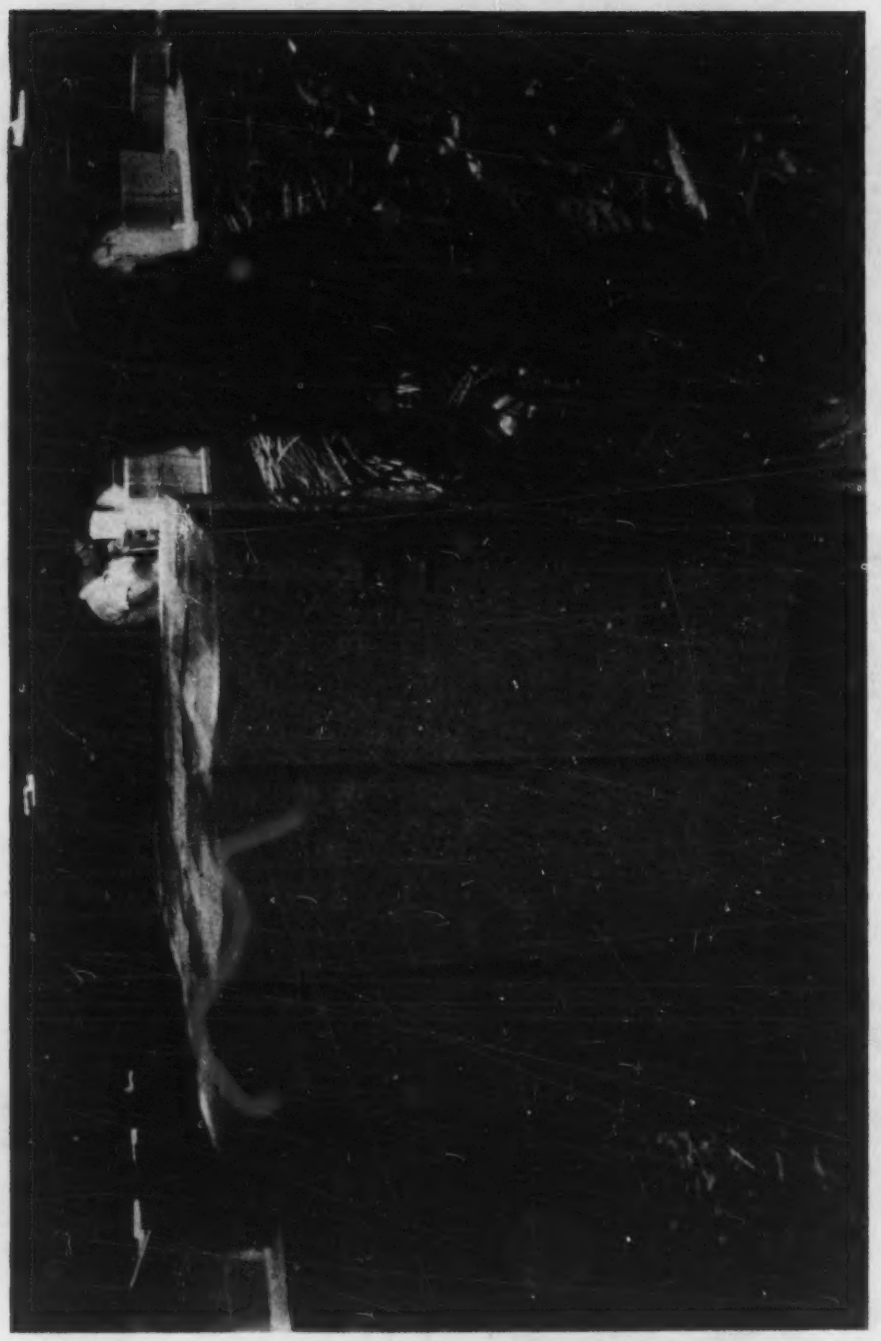
A SYNTHETIC SIZE

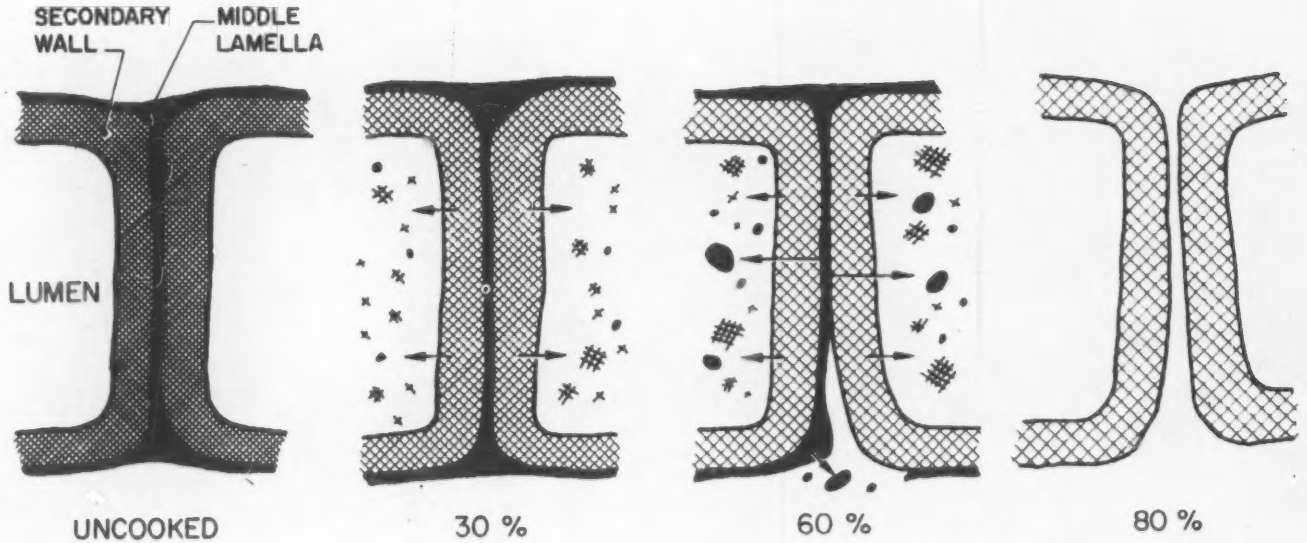
PAPERMACHINE
WET-END CHEMISTRY



RECYCLING







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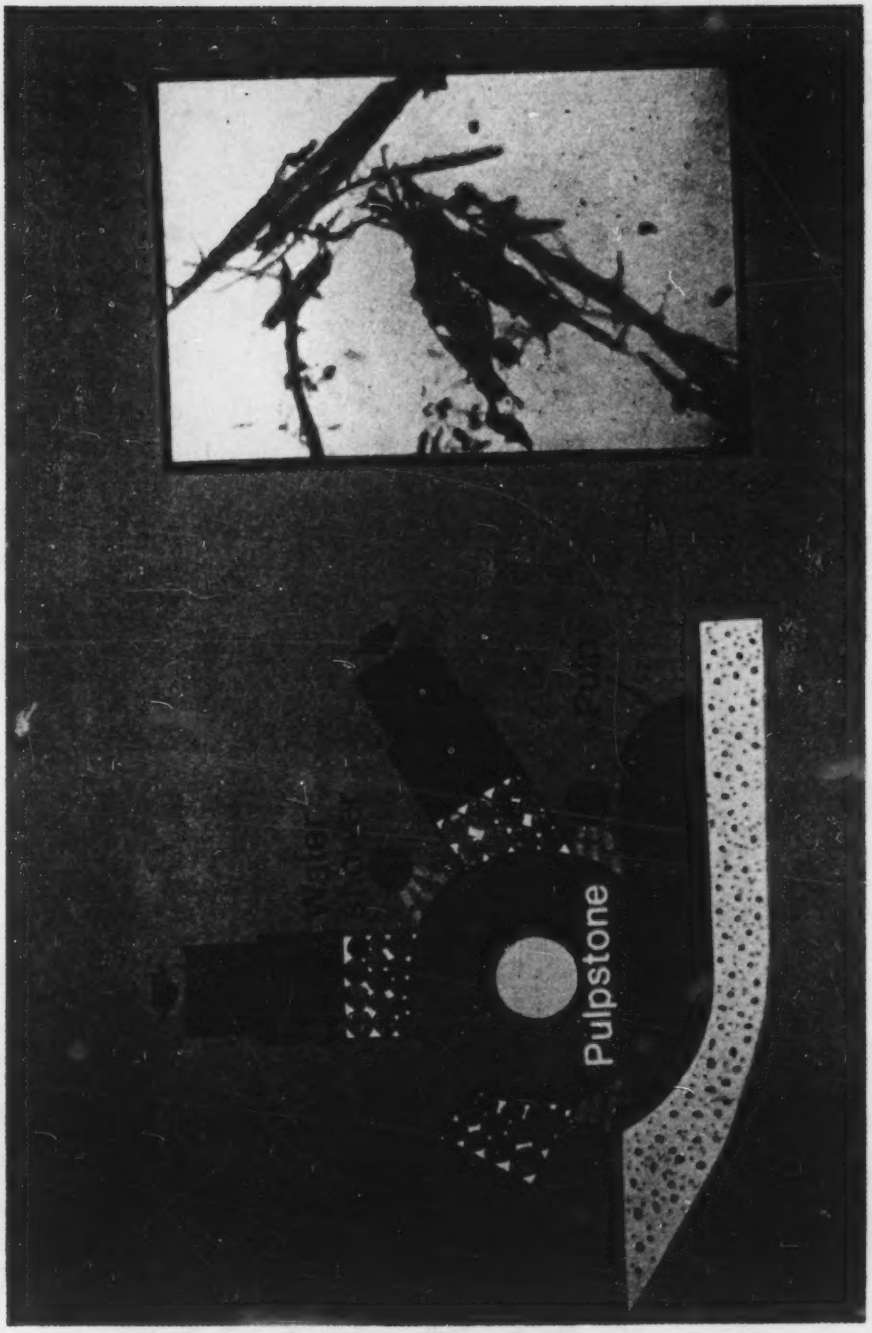
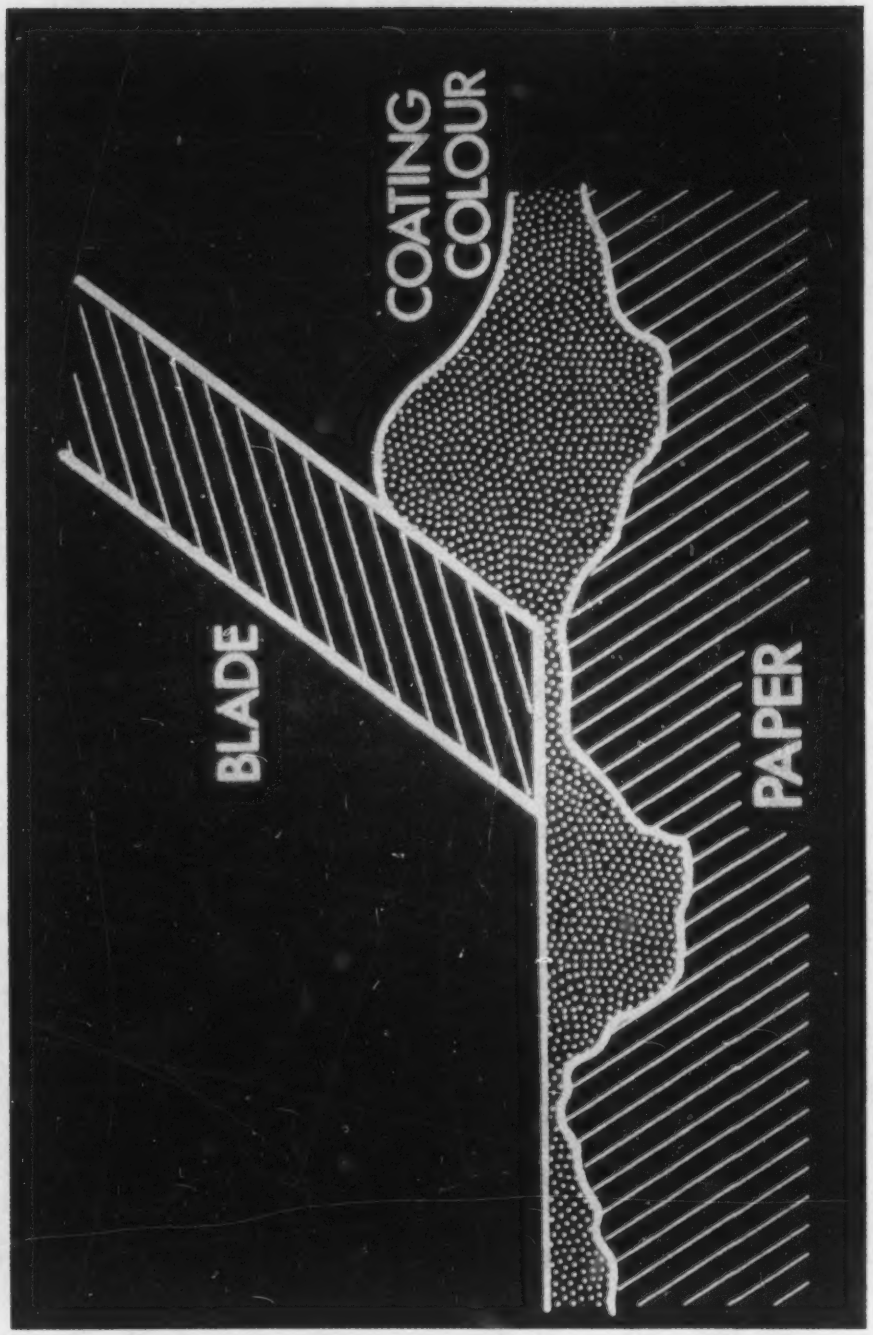

Pulpstone


COATING
COLOUR
BLADE
PAPER

Mr. BROWN. Thank you very much, Mr. Lyne.

Mr. Nagle.

Mr. NAGLE. I have no questions, Mr. Chairman.

Mr. BROWN. The picture I get from you gentlemen is basically rather optimistic about the availability of acid- free paper in the near term. Are we to assume that that's at competitive cost also?

Dr. LYNE. If I may address that, I believe Mr. Kalina from the National Library of Medicine mentioned a survey that the National Library's permanent paper task force conducted looking at the prices of acid and alkaline papers of equivalent characteristic, and found no difference in price. That is, of course, the experience of our company.

We do not differentiate between alkaline and acid papers in terms of the cost to the consumer.

Mr. BROWN. Mr. Jenifer, I didn't get that impression from your testimony. You seemed to indicate that cost was a factor in your acquisition of paper.

Mr. JENIFER. Cost is a factor primarily because we are required to buy at the best price and that's what definitely makes it a factor.

We feel as if—as more and more mills are producing this type paper, then costs are going to be driven down.

Mr. BROWN. Would you have any problem in purchasing on specifications that required longevity?

Mr. JENIFER. We do that now. We purchase on specification, depending on what our customer demands, what product.

Mr. BROWN. To what degree are your customers or users demanding papers that have long lives?

Mr. JENIFER. I think what probably goes on right now, a customer makes a decision on a given publication that's to be produced and they determine if there is an archivable value and they require that type of paper from us. And as I think I mentioned in our statement, what we are planning on doing is consulting more with the customer in the future and asking these specific questions—what is the use of this particular document—to even ensure that we are doing a better job within our facilities.

We have found that of 110 million pounds of paper we have bought, about 30 million pounds of it was acid-free. And about 24 million of that 30 million was recycled paper. So based on the paper we have in-house throughout the course of a year, we will begin to segregate this paper and use it on documents that we feel should have an archivable value or be preserved, we think.

So we will do two things. We will advise our customers and we will make certain determinations ourselves based on what we find we have in stock.

Mr. BROWN. Do you have any provisions for those of us who would like to have paper that will self-destruct after a very brief period?

[Laughter.]

Mr. JENIFER. It's called a shredder.

Mr. BROWN. Gentlemen, I don't have any further questions, but we may need to complete the record with some additional information and, if so, we would like to submit some questions in writing to you.

Mr. LAWRENCE. One point I would like to make a comment on. My colleague, Dr. Lyne, talked about the difficulty in using postconsumer waste in recycling.

Our experience is that we are able to use both acid and alkaline papers in postconsumer waste. So that is not a problem for our particular company.

But there is a potential problem in the massive use of postconsumer waste by recyclers in that that type of raw material has a lot of plastic contamination in it and it is very difficult—in fact, it is impossible today to make the high quality type of book papers that are required by the marketplace with large quantities of postconsumer waste.

So that is an area, if the government were interested and willing to give some assistance in, a research program that was directed toward enabling the recycling industry to use postconsumer waste in large quantities is something that would be very helpful to the industry I believe and to the objectives that the people in this room today have talked about.

Mr. BROWN. Well, we are basically focusing on printing papers and the need to protect and preserve books and other artifacts that have historical value and cultural value, which I gather is not the largest part of the paper industry. In fact, it's a very small part of it.

Is there any problem with recycling postconsumer waste for nonprinting purposes, for paper that would be used for—

Mr. LAWRENCE. I will tell you I'm not an expert in that area, so I can't answer that question.

Dr. LYNE. Our company makes a broad range of fine papers, of course, including copier papers, for example, which have, among other things, dirt or cleanliness specifications. Also papers for optical character reading where dirt is extremely important. So dirt is an issue.

I would certainly second Mr. Lawrence's recommendation that more research be encouraged in the area of recycling of mixed waste because we know we can tolerate a certain amount of it. We believe that's something in the order of 10 to 20 percent. If we go above that we have problems with the decomposition of the material which would be totally unsatisfactory for these papers.

Mr. BROWN. This subcommittee is uniquely interested in ideas for production of research that would benefit the economy, so we may want to go into that in a little more detail.

Thank you all very much for your presentation this morning. As I say, we may want to ask you to respond in writing to some questions.

The subcommittee will be adjourned.

[Whereupon, at 12:15 p.m., the hearing was adjourned.]

APPENDIX

Your reference

Our reference

Date 14 December 1988

Her Majesty's Stationery Office
St Crispins
Duke Street
Norwich NR3 1PD
Telephone
Direct dialling
0603-69 3559
GTN 2014 **
Switchboard
0603-622211
Fax-Gp3 0603 695582
Telex 97301

Ms Ellen McCrady
Editor
Abbey Publications
320 East Central Street
Provo
Utah 84601
U.S.A

Dear Ms McCrady

Thank you for your letter of 11 November. There is no British law or regulation requiring HMSO to print its publications on permanent or acid free paper.

We are well aware of the problems that are now being experienced with books printed on mechanically ground wood pulp because of the effects of lignin and alum used to produce this paper.

In 1985 we decided to take positive measures and introduce acid-free papers into the production of some of our sale publications. Whilst it would not be practicable at present to introduce acid-free paper across the whole range of our publishing - much of which is in any case rather ephemeral in nature - we now specify acid-free paper where a publication is judged to be of a permanent value and archival interest. Examples include Bound Volumes of Public General Acts and Statutory Instruments (our primary and secondary legislation), major Public Record Office titles, Royal Commission Historical Monuments Inventories and Cabinet Office Historical Series. We are also planning to standardise on acid free paper at our main printing factory responsible for printing a large proportion of Parliamentary publications.

You may be interested to know that this press produces two prints of each Act of Parliament on durable vellum. After examination by the Public Bill Office of the House of Commons they are endorsed with the words by which the Royal Assent was signified, signed by the Clerk of the Parliaments and become the Official Copies of the Act. One print is sent for custody to the Public Record Office and the other to the House of Lords Record Office.

We do not produce a newsletter specifically on alkaline or permanent paper. Our Supply Division is well informed about acid-free papers, the standards, the suppliers and the various classifications of papers manufactured. They use this knowledge to assist our customers, government departments and other public bodies, obtain the right material for a particular task.

I included a short article on acid-free paper in a Publications' Newsletter I edit. I enclose a copy as well as a copy of an article which appeared earlier this year in a weekly journal, The Listener published by the BBC. This gave HMSO a favourable mention in this context.

I thought that you would also like to see a little booklet produced by the Publishers Association and sent with their compliments. Perhaps you would be kind enough to add my name to your mailing list of people who receive your newsletter.

I hope you will find the foregoing helpful and if you have any further questions do not hesitate to write to me.

Yours sincerely

Bob Barnard.

R C BARNARD
Deputy Director
Publications Division

Encs

WASHINGTON OFFICE

AMERICAN LIBRARY ASSOCIATION

110 MARYLAND AVENUE, N.E. • WASHINGTON, D.C. 20002 • (202) 547-4440

May 30, 1989

The Honorable Doug Walgren
Chairman, Subcommittee on Science, Research and Technology
Committee on Science, Space and Technology
U. S. House of Representatives
Washington, D.C. 20515

Dear Mr. Chairman:

On behalf of the American Library Association and its membership of 48,000 librarians, library trustees and other information professionals, let me congratulate you and your subcommittee and staff on the hearing on Preservation of Print, May 4, 1989.

The witnesses were authoritative and well selected: Senator Claiborne Pell, chief sponsor of S.J. Res. 57 to Establish a National Policy on Permanent Papers; the Librarian of Congress and Charles Kalina of the National Library of Medicine; Kurt Vonnegut and Barbara Goldsmith representing the Authors Guild and the New York Public Library; the Acting Public Printer and the Chairman of the Association of American Publishers; representatives of two paper companies and the EPA on paper technology and the use of recycled paper. Among them they presented a well-rounded exposition of our current loss of publications and documents through the deterioration of the acid papers used for the last century and a quarter and the prospects for ending the continuation of the problem through the use of alkaline printing and writing papers.

We do not wish to anticipate the subcommittee's report and recommendations, but from the perspective of the library community, the hearings brought out the following major points in a clear and convincing manner:

1. There is no dispute that deterioration of the acid papers in our archives and libraries can be avoided in the future by the use of alkaline printing and writing papers.
2. If we do not shift to alkaline papers, we shall not be able to stop the present annual cost of scores of millions of dollars to salvage what we can by deacidification and microfilming.
3. Alkaline printing and writing papers that will last several hundred years are being produced at no greater cost than acidic papers.

4. There seemed to be a concensus among the expert witnesses that about 30 per cent of uncoated fine papers were alkaline in 1988 and this percentage is growing rapidly. It seems clear that within a few years there should be enough alkaline paper to meet U.S. requirements.

5. American publishers have begun to respond to the pleas of libraries and public agencies to use alkaline paper and perhaps a quarter to a third of American first printings of hardcover books are on permanent paper, although this is usually not noted in the publications themselves. For scholarly books the percentage is larger, The witness for the Association of American Publishers presented a resolution urging his members to use alkaline papers for first printings of hardcover books.

6. The Acting Public Printer testified that 30 percent of paper stock on hand was now alkaline, and that the Joint Committee on Printing had adopted one specification for permanent uncoated paper. He also announced that the Government Printing office was planning to take two further steps: to advise and encourage agencies to specify permanent paper where appropriate, and to use alkaline paper where appropriate even if agencies had not requested it. He did not add that when alkaline paper was used that it would be so stated in the publication.

7. Testimony by and exchanges among the paper company witnesses and the EPA representative brought out clearly that recycled papers can be either acidic or alkaline depending on the processes used. Recycling and preservation are not mutually exclusive goals. Acceptable alkaline printing and writing papers can be made from recycled materials of a certain quality, but at present the technology does not permit the use of household waste paper because of the contaminants therein.

8. Currently there is only one American standard for printing papers --American National Standard Z39.48 (1984),and it covers only uncoated paper. No other country appears to have a similar national standard, but a committee of the International Standards Organization is about to develop an international standard based upon the U.S. standard.

9. Comprehensive as the hearings were, in our opinion two subjects were not covered in as much detail as one might wish:

A. Identifying the paper in the publication. The Librarian of Congress touched on the importance of this point, but it was not mentioned by the publisher witness nor included in the Association's resolution, We librarians regard this as essential. If the nature of the paper is not identified in the publication itself and in the cataloging, libraries will be faced with the completely unnecessary chore of making a chemical test on each item received. On the other hand, it is very simple for the publisher to provide this information to the Library of Congress when he is providing the other information that will appear in the book under the well-established Cataloging in Publication Program.

B. Other Countries. The hearings understandably were

not able to cover the production and use of alkaline paper in other countries, a very important matter for the Library of Congress and other research libraries, since so large a proportion of the materials they acquire comes from other nations. Actually we do not have comprehensive and detailed information on this question, but activities have been set in motion to correct this deficiency. A resolution similar to the Pell-Williams Joint Resolution will be offered at the August 1989 annual conference of the International Federation of Library Associations and Institutions (IFLA) in Paris, which should not only stimulate the use of alkaline paper around the world, but lead to the collection of essential data not now available. Also, at a meeting in Washington a few days after your hearing, a committee of the International Standards Organization agreed to expedite action to produce an International Standard on permanent printing and writing papers based on the American Standard now in the last stages of revision and expansion. What we do know suggests that a few governments are slighly ahead of us, such as Her Majesty's Stationary Office with respect to British Parliamentary papers and the Finnish Government for all official papers; but by and large the United States seems to be in a leadership position on this issue.

In conclusion, we applaud the subcommittee for an excellent and authoritative hearing, and urge that the hearing be printed and the report issued as expediously as possible in support of Congressional consideration of the Pell-Williams Joint Resolution (S.J.Res. 57 and H.J. Res.226). The early passage of this resolution will not only expedite progress in itself but set an example to State and local governments and other countries. The optimum outcome would be passage of the resolution prior to the August 17 opening of the IFLA conference in Paris, which would also mean before the August Congressional recess.

We appreciate this opportunity to present our views for the consideration of the subcommittee and for inclusion in the printed record, which will be eagerly awaited by librarians, archivists, historians and many others both in this country and abroad.

Sincerely.

Eileen D. Cooke
Director
ALA WAshington Office

National Archives

Washington, DC 20408

MAY 25 1989

Honorable Doug Walgren
Chairman, Subcommittee on Science,
Research and Technology
Committee on Science, Space and Technology
House of Representatives
Washington, DC 20515-6305

Dear Mr. Walgren:

I commend the Subcommittee on Science, Research and Technology for addressing the issue of paper preservation and the damaging impact of acidic paper upon our intellectual heritage. The witnesses at the hearing on May 4, 1989, gave ample evidence of the problems this engenders for the print medium. I would like to supplement their testimony by outlining some of the problems my institution encounters in preserving the nation's documentary heritage. Please insert the following paragraphs into the record of the hearing.

The National Archives and Records Administration (NARA), the repository of Federal records judged to have enduring value, addresses the crisis of deteriorating paper records - directly and daily. The approximately 3.25 billion paper documents held by the Archives comprise census records, immigration records, citizen's petitions, correspondence files, tax assessments, engrossed laws, treaties, manuals, program files, policy statements and much more that bear witness to activities and operations of the Federal Government.

The vast majority of these papers are less than 100 years old. Already, though, they display the effects of poor paper quality and testify to the real and potential erosion of our national memory. For example, during World War II the Bureau of the Budget instructed Federal agencies to use inexpensive paper as an economy measure. Today, as the fiftieth anniversary of World War II approaches, many of these valuable records are fragile and difficult to use. Consequently, the Archives now faces the monumental task of transferring these deteriorating records to a more stable medium at a cost exceeding $71 million dollars. The cost of preserving other records currently held by and being added to the Archives will require many more millions of dollars.

The continued use of poor quality paper for records and books insures that cultural institutions throughout the country will face a spiraling, self-perpetuating preservation problem that will soon overcome our collective resources and strategies. The only effective way to stop this destructive and costly trend is to attack the problem at its source by using permanent paper for all records of enduring value. The case for publishing books on permanent paper was stated eloquently at the hearing on May 4, and the National Archives wholeheartedly supports the continuation of this critically important endeavor.

However, the case for permanent paper must be expanded beyond the realm of books if the preservation needs of archives are to be adequately addressed. While the books that libraries collect are produced in multiple copies, the records that archives receive are predominantly unique and irreplaceable. The quality of paper upon which are recorded the policies, procedures, decisions, and actions of Government agencies will determine the quality of access the American people have to the record of their Government's actions. At this time, paper quality for all levels of agency records is poor, and there is little regard among agency officials for the need of future generations to use and learn from today's documentary record. When these files are subsequently transferred to the National Archives, we simultaneously inherit a rich information resource and the deterioriating base upon which the information resides. Staff and budgetary limitations make it impossible for NARA to deal with all but the most pressing preservation concerns.

Adverse Effect of EPA Regulation

Ironically, as interest in paper permanence and durability grows, our Federal and state agencies must cope with the recent Environmental Protection Agency (EPA) regulation requiring the use by these agencies of writing and printing papers that contain 50% recycled stock.

The National Archives supports the environmental goals of the EPA regulation, but we are concerned that its implementation may seriously endanger the longevity of Government records. Specifically, we are concerned that paper that meets the requirements for recycled content will not be appropriate for archival records. Further, we believe that the complex exemption application and reporting processes required by the regulation will have the net effect of actually lowering the quality of paper used for valuable records.

To survive for posterity, archival records should be produced on permanent paper. Although the growth in alkaline paper production is a positive step, alkalinity (pH) is just one factor to consider when evaluating paper permanence. Other important points to consider are paper stock, alkaline reserve, and product durability. These issues are not dealt with adequately in the EPA's analysis of the impact of using recycled paper.

While supplementary information to the EPA regulation (40 CFR Part 250, Guidelines for Federal Procurement of Paper and Paper Products containing recovered materials) states that recycled paper contains shorter fibers and is weaker than an otherwise equivalent virgin sheet, it does not address the related issue of sheet durability. Indeed, the supplement states that increasing thickness for recycled sheets may compensate for some strength loss, but it does not improve other chemical and physical properties adversely affected by the inclusion of waste paper. The supplement also fails to address the issues of paper stock and alkaline reserve. Above and beyond these questions is the lack of scientific research on the permanence and durability of recycled alkaline paper.

Consequently, the National Archives strongly opposes the adoption of recycled alkaline paper for archival purposes, since we do not know, and cannot predict, how it will behave over time.

Further, the suggestion that an agency request exemption from the EPA regulation by drafting performance based specifications and submitting yearly documentation is impractical. This approach incorrectly assumes that the agency concerned with long term preservation is the creating agency. Within the Federal Government many agencies create records, but only the National Archives is charged with preserving historically valuable records.

For the exemption process to work, Federal agencies would have to develop and agree to joint specifications for exempt papers. Additionally, each agency would have to take the extra step of documenting and defending the requested exemption, not for it's own needs, but for the ultimate needs of the National Archives. When the use of recycled paper requires no action and when their own immediate needs are not being served, busy Federal agencies will not be inclined to devote the long hours required by the exemption reporting

process. As a result, recycled paper will almost certainly replace other paper, with perhaps calamitous results.

As the largest archival repository in the United States and as the legal guardian of the records of the Federal Government, the National Archives acknowledges its responsibility to assume a leadership role in ensuring the preservation of our Nation's most important records. To this end, the Archives will vigorously promote the use of permanent papers for archival records and provide explicit guidance on this matter. We are now in the process of developing an advisory bulletin to alert Federal agencies to the preservation implications of the Environmental Protection Agency regulation for procuring recycled paper and will be at the forefront in developing specifications to aid the exemption application process. The Archives will also continue to work in cooperation with other Federal agencies to find viable solutions to the challenges of preserving both our national and cultural heritage.

Thank you again for your support of improved paper quality and your concern for the nation's intellectual heritage. The National Archives stands ready to assist you in this vital endeavor.

Sincerely,

DON W. WILSON
Archivist of the United States